YAMAHA

2005

YP250R

SERVICE MANUAL

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EAS00000

YP250R 2005
SERVICE MANUAL
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NOTICE

This manual was produced by the Yamaha Motor España S.A. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor España S.A. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:

Designs and specifications are subject to change without notice.

EAS00005

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the vehicle operator, a bystander or a person checking or repairing the vehicle.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.

NOTE: A NOTE provides key information to make procedures easier or clearer.

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HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.
Refer to “SYMBOLS”.

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

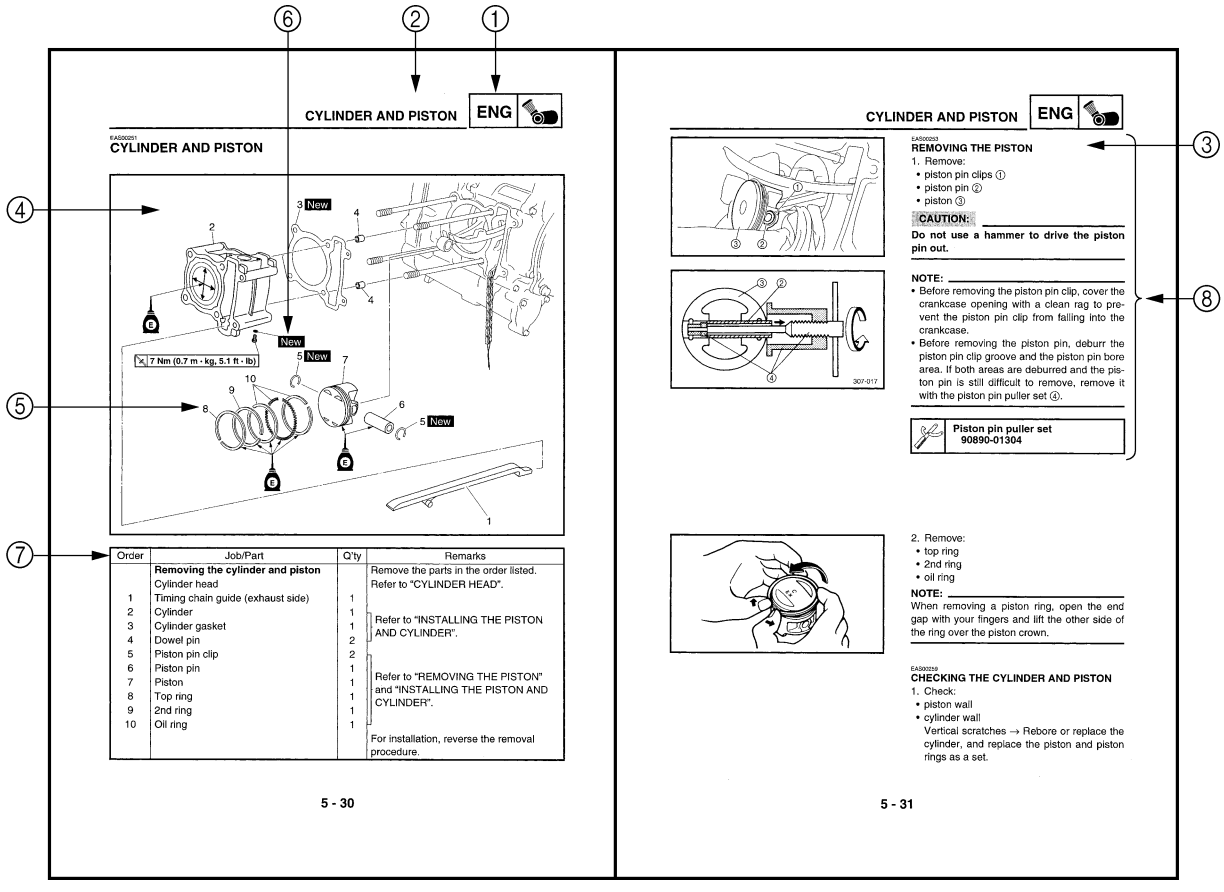
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

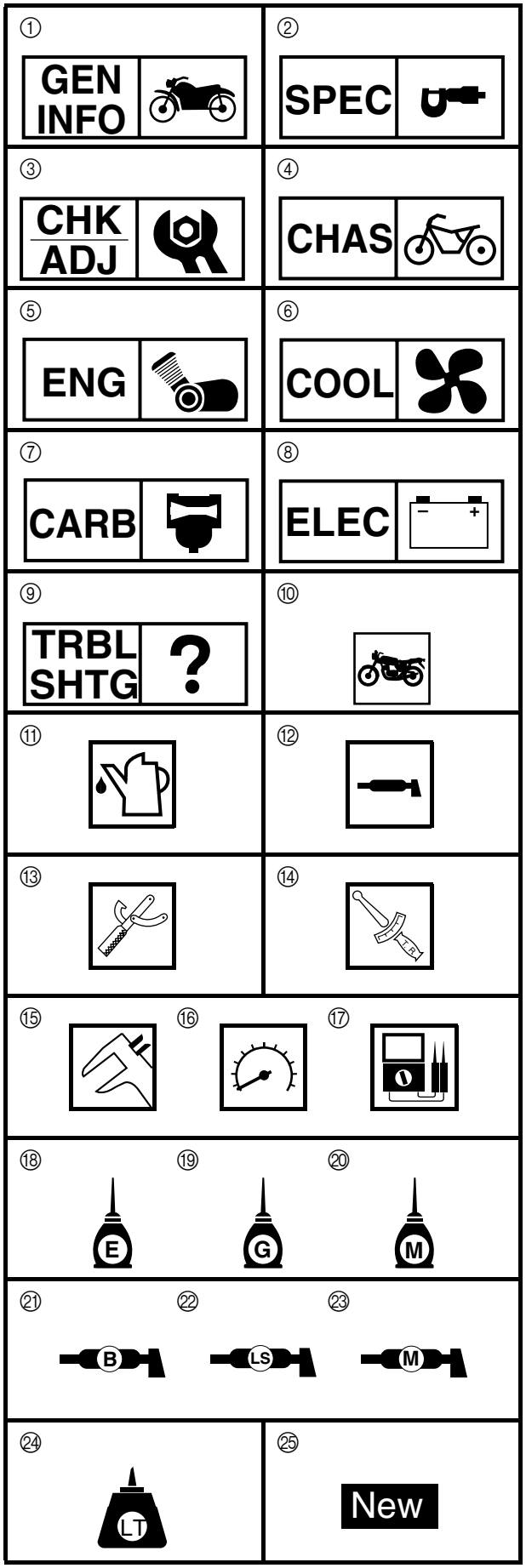
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced.
Refer to “SYMBOLS”.

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.





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SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Chassis
⑤ Engine
⑥ Cooling system
⑦ Carburetor
⑧ Electrical system
⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

⑩ Serviceable with engine mounted
⑪ Filling fluid
⑫ Lubricant
⑬ Special tool
⑭ Tightening torque
⑮ Wear limit, clearance
⑯ Engine speed
⑰ Electrical data

Symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑱ Engine oil
⑲ Gear oil
⑳ Molybdenum-disulfide oil
㉑ Wheel-bearing grease
㉒ Lithium-soap- based grease
㉓ Molybdenum-disulfide grease

Symbols ㉔ to ㉕ in the exploded diagrams indicate the following.

㉔ Apply locking agent (LOCTITE®)
㉕ Replace the part

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CHAPTER 1
GENERAL INFORMATION

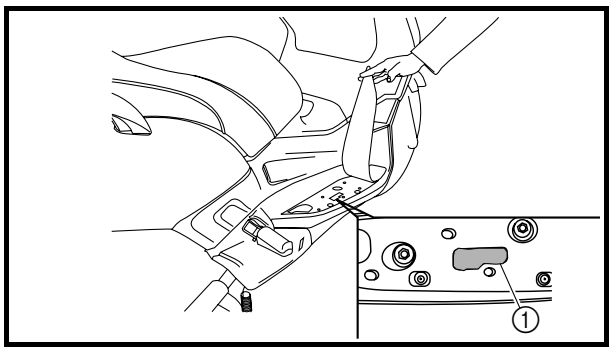
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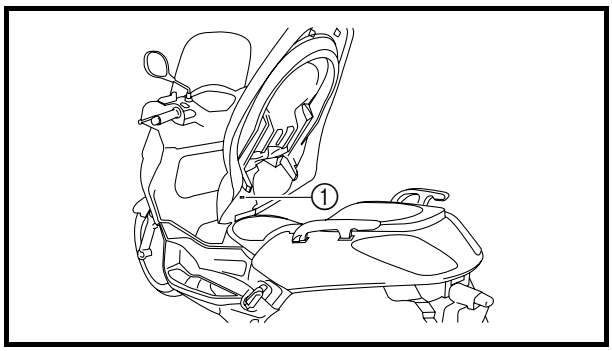
GENERAL INFORMATION

IDENTIFICATION

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VEHICLE IDENTIFICATION NUMBER

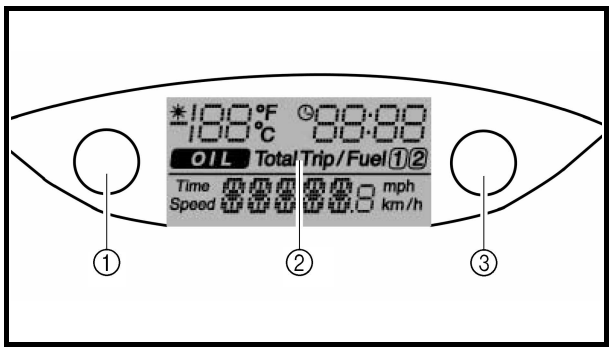
The vehicle identification number ① is stamped into the frame.



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MODEL LABEL

The model label ① is affixed underneath the seat. This information will be needed when ordering spare parts.



MULTI-FUNCTION DISPLAY

The multi-function display is equipped with the following:

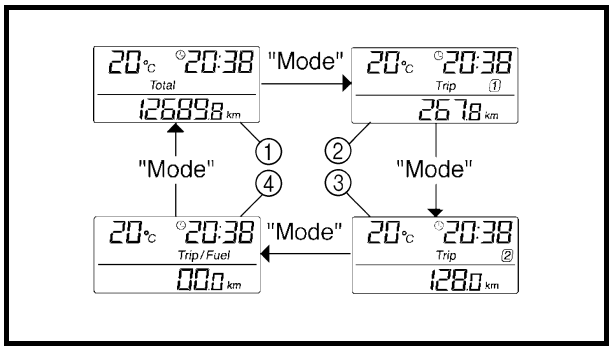
- an odometer (which shows the total distance traveled)
- two tripmeters (which show the distance traveled since they were last set to zero, the time passed since the tripmeters were set to zero, and the average speed traveled during this time)

① "MODE" button
② Multi-function display
③ "SET" button

- a fuel reserve tripmeter (which shows the distance traveled since the fuel level warning light came on)
- a clock
- an ambient temperature display
- an oil change indicator (which comes on when the engine oil should be changed)

NOTE:

- For the UK, the distance traveled is displayed in miles and the temperature reading is displayed in °F.
- For other countries, the distance traveled is displayed in kilometers and the temperature reading is displayed in °C.

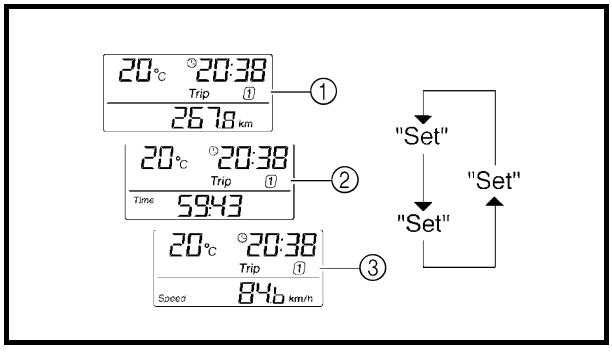


① Total
② Trip 1
③ Trip 2
④ Trip/Fuel

Odometer and tripmeter modes

Pushing the "MODE" button switches the display between the odometer mode "Total" and the tripmeter modes "Trip" in the following order:

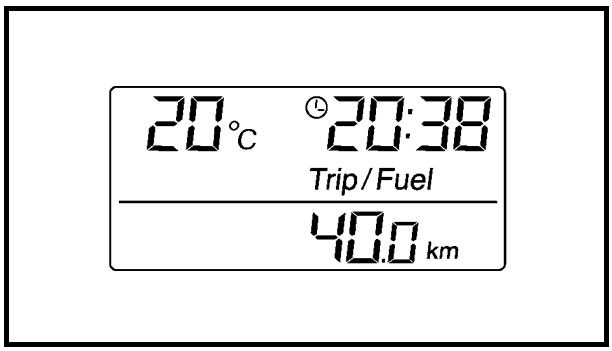
Total → Trip 1 → Trip 2 → Trip/fuel → Total



① Distance
② Time
③ Average speed

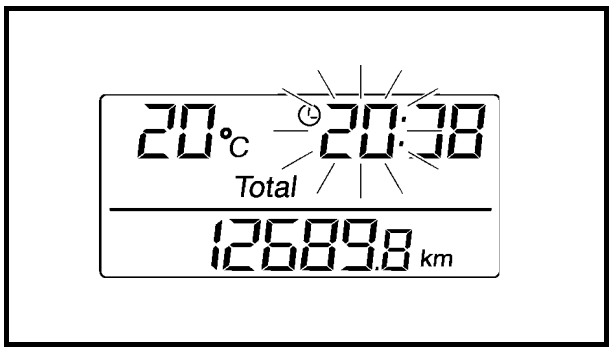
NOTE:

- The Trip/fuel odometer is only activated if the fuel level warning light comes on.
- The Trip 2 odometer is automatically reset after turning the key to "OFF" and two hours have passed.



Pushing the “SET” button when in the tripmeter mode switches the display between the different tripmeter functions in the following order:

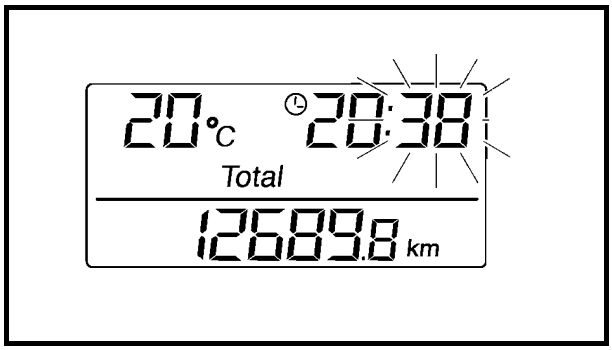
Distance → Time → Average speed → Distance



If the fuel level warning light comes on, the display will automatically change to the fuel reserve tripmeter mode “Trip/fuel” and start counting the distance traveled from that point. In that case, pushing the “MODE” button switches the display between the various tripmeter and odometer modes in the following order:

Trip/Fuel → Trip 1 → Trip 2 → Total → Trip/fuel

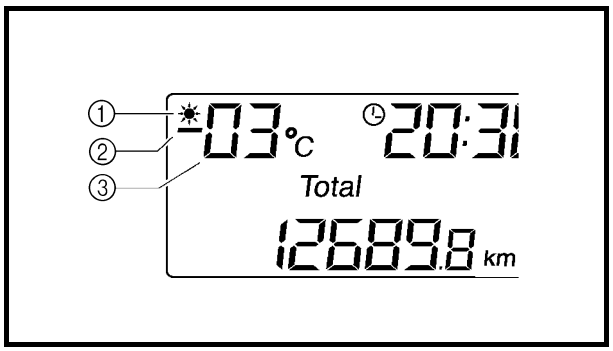
To reset a tripmeter, select it by pushing the “MODE” button, and then push the “SET” button for at least one second. If you do not reset the fuel reserve tripmeter manually, it will reset itself automatically and the display will return to the prior mode after refueling and traveling 5 km.



Clock mode

To set the clock:

1. When the display is in the “Total” mode, push the “SET” button for at least two seconds.
2. When the hour digits start flashing, push the “SET” button to set the hours.
3. Push the “MODE” button, and the minute digits will start flashing.
4. Push the “SET” button to set the minutes.
5. Push the “MODE” button and then release it to start the clock. The display will return to the “Total” mode.

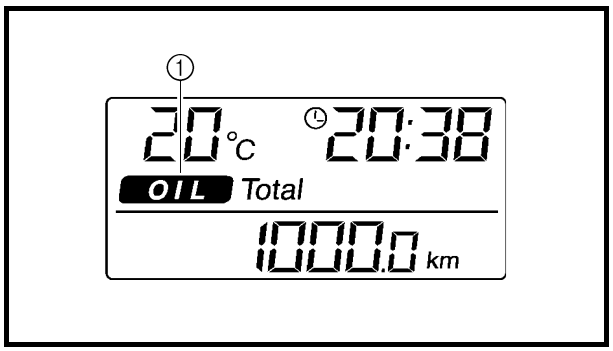


Ambient temperature display

This display shows the ambient temperature from -30 °C to 50 °C.

The frost warning indicator "*" automatically comes on if the temperature is lower than 3 °C.

① Frost warning indicator
② Negative symbol
③ Ambient temperature



Oil change indicator "OIL"

The engine oil should be changed when this indicator comes on. The indicator stays on until it is reset. After changing the engine oil, reset the indicator as follows.

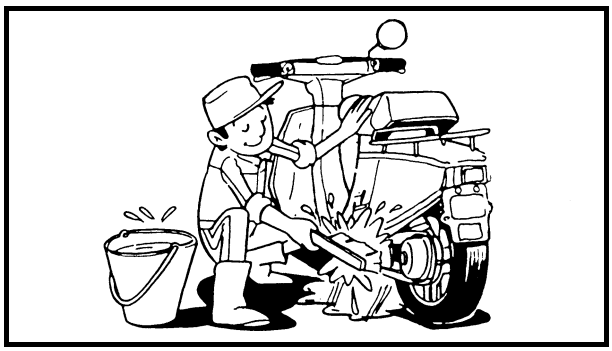
① Oil change indicator "OIL"

To reset the oil change indicator:

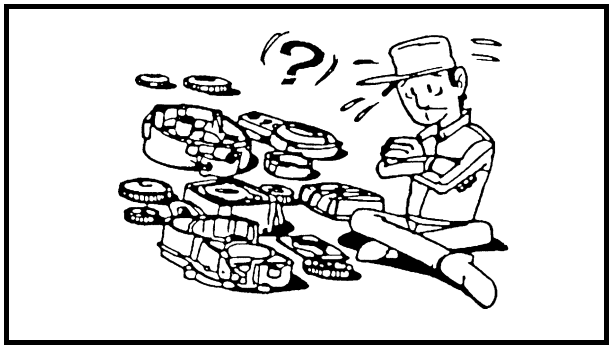
1. Set the main switch to "ON" while holding the "MODE" and "SET" buttons pushed for two to five seconds.
2. Release the buttons, and the oil change indicator will go off.

NOTE:

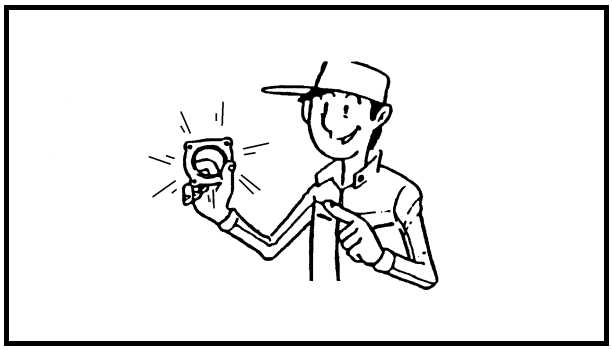
- The oil change indicator will come on at the initial 1000 km and every 3000 km thereafter.
- If the engine oil is changed before the oil change indicator comes on, the indicator must be reset after the oil change for the next periodic oil change to be indicated at correct time.



EAS00020
IMPORTANT INFORMATION
PREPARATION FOR REMOVAL AND DISASSEMBLY
1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.

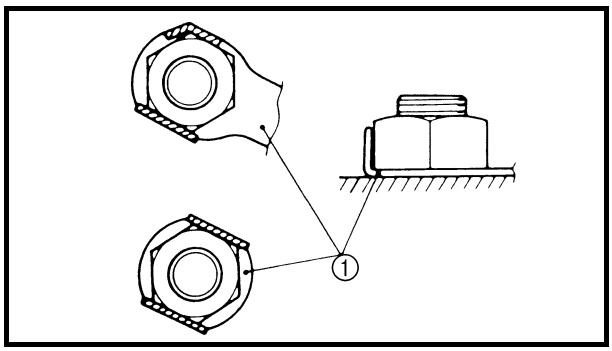


2. Use only the proper tools and cleaning equipment.
   Refer to “SPECIAL TOOLS”.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



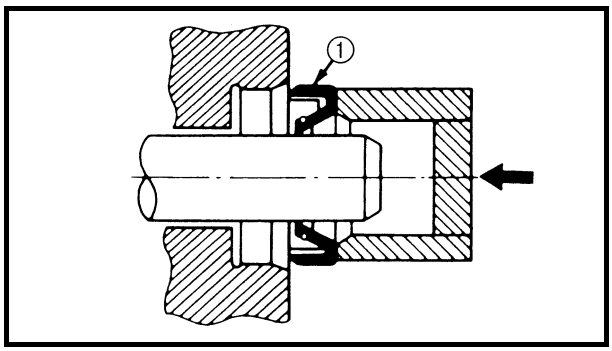
EAS00021
REPLACEMENT PARTS
Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

EAS00022
GASKETS, OIL SEALS AND O-RINGS
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023
LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



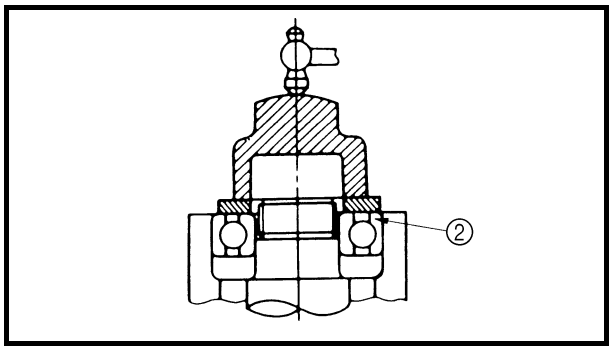
EAS00024
BEARINGS AND OIL SEALS

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

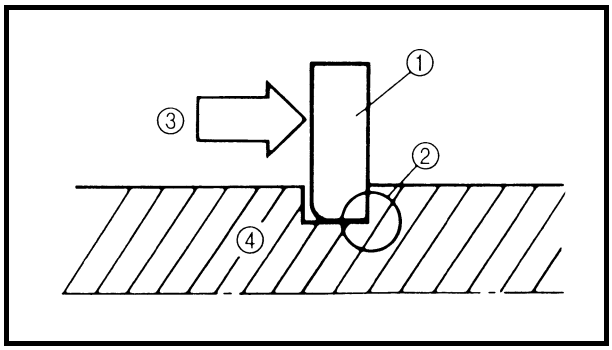
① Oil seal

CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



② Bearing



EAS00025
CIRCLIPS

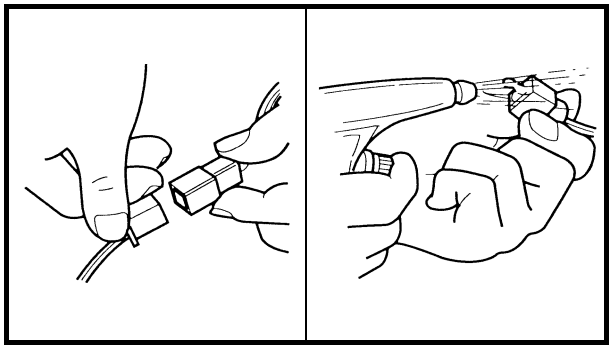
Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft

EAS00026
CHECKING THE CONNECTIONS

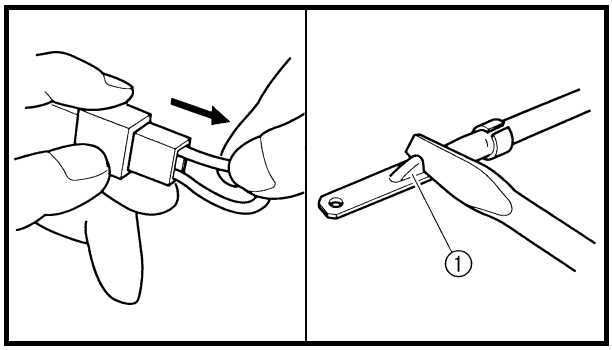
Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
   - lead
   - coupler
   - connector



2. Check:
   - lead
   - coupler
   - connector

   Moisture → Dry with an air blower.
   Rust/stains → Connect and disconnect several times.



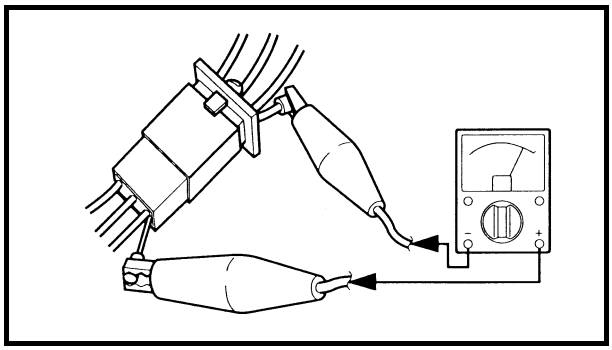
3. Check:
   - all connections

   Loose connection → Connect properly.

NOTE:
If the pin ① on the terminal is flattened, bend it up.

4. Connect:
   - lead
   - coupler
   - connector

NOTE:
Make sure all connections are tight.

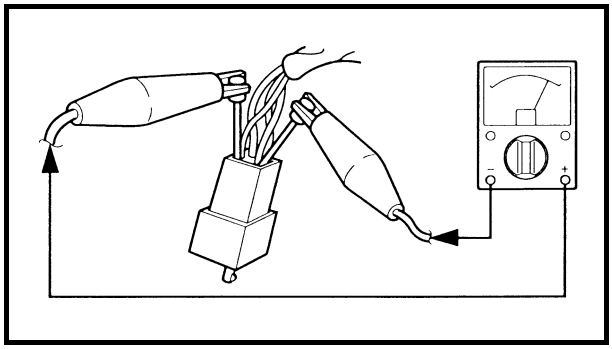


5. Check:
   - continuity

   (with the pocket tester)



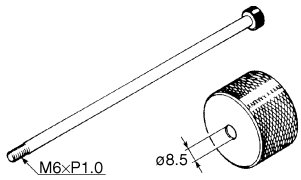
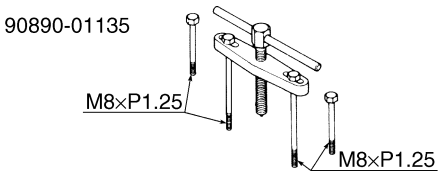
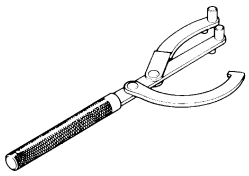
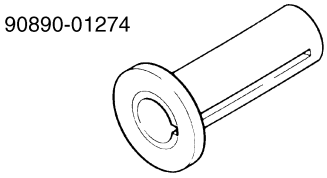
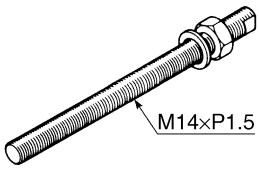
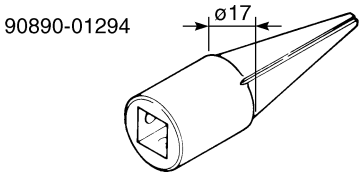
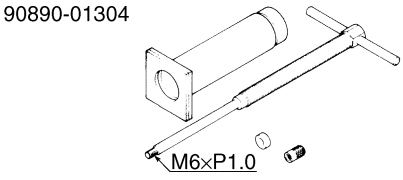
Pocket tester
90890-03112

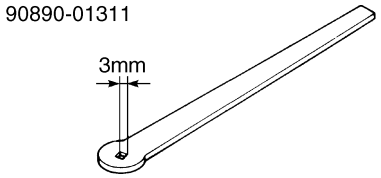
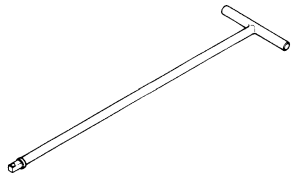
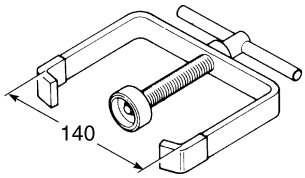
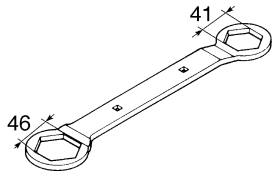
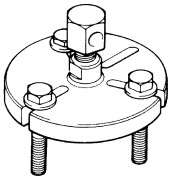
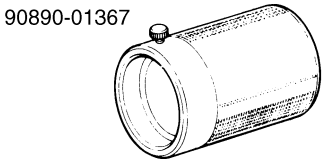
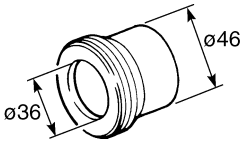
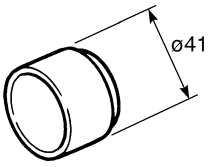


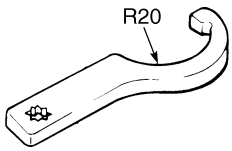
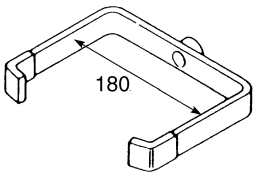
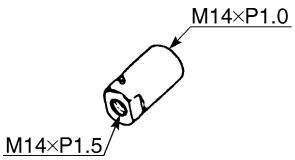
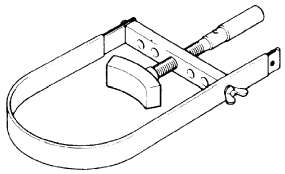
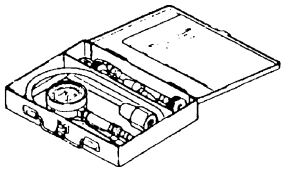
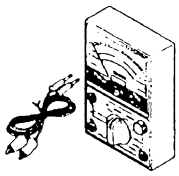
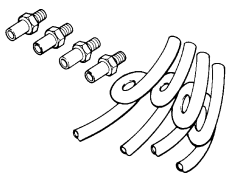
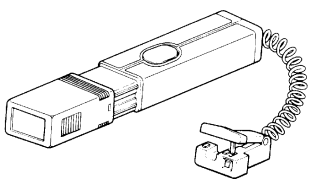
NOTE:
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

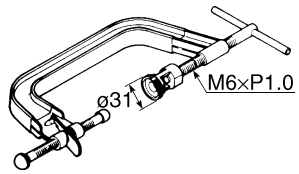
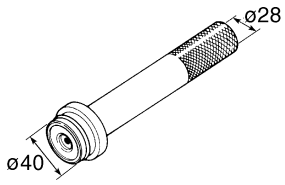
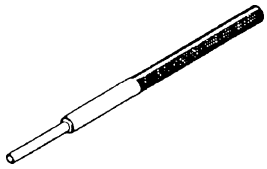
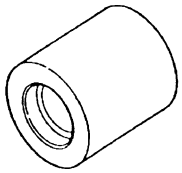
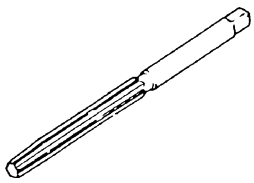
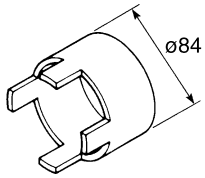
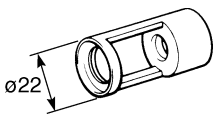
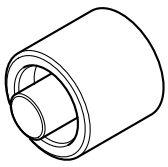
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SPECIAL TOOLS

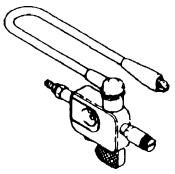
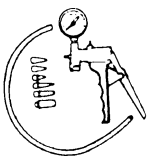
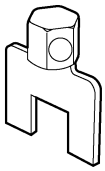
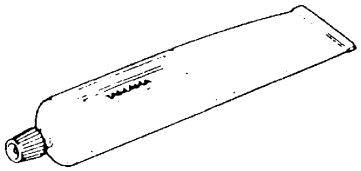
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Function	Illustration
90890-01083 90890-01084	Slide hammer bolt Weight These tools are used to remove or install the rocker arm shafts.	
90890-01135	Crankshaft separating tool This tool is used to remove the crankshaft.	
90890-01235	Rotor holding tool This tool is used to hold the primary fixed sheave.	
90890-01274	Crankshaft installer pot This tool is used to install the crankshaft.	
90890-01275	Crankshaft installer bolt This tool is used to install the crankshaft.	
90890-01294	Damper rod holder This tool is used to hold the damper rod when removing or installing the damper rod.	
90890-01304	Piston pin puller set This tool is used to remove the piston pins.	

Tool No.	Tool name/Function	Illustration
90890-01311	Tappet adjusting tool This tool is used to adjust valve clearance.	
90890-01326	T-handle This tool is used to hold the damper rod when removing or installing the damper rod.	
90890-01337	Clutch spring holder This tool is used to disassembly and assembly the secondary sheave.	
90890-01348	Locknut wrench This tool is used to remove or install the clutch carrier nut.	
90890-01362	Flywheel puller This tool is used to remove the generator rotor.	
90890-01367	Fork seal driver weight This tool is used to install the oil seal, dust seal, and the outer tube bushing of a front fork leg.	
90890-01370	Fork seal driver attachment (ø36) This tool is used to install the oil seal and the outer tube bushing of the front fork leg.	
90890-01396	Oil seal guide (ø41) This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.	

Tool No.	Tool name/Function	Illustration
90890-01403	Steering nut wrench This tool is used to loosen or tighten the steering ring nuts.	
90890-01464	Clutch spring holder arm This tool is used to disassembly and assembly the secondary sheave.	
90890-01478	Adapter (M14) This tool is used to install the crankshaft.	
90890-01701	Sheave holder This tool is used to hold the generator rotor, clutch housing, and clutch carrier.	
90890-03081	Compression gauge This tool is used to measure the engine compression.	
90890-03112	Pocket tester This tool is used to check the electrical system.	
90890-03134	Exhaust attachment This tool is used to measure the CO density.	
90890-03141	Timing light This tool is used to check the ignition timing.	

Tool No.	Tool name/Function	Illustration
90890-04019	Valve spring compressor This tool is used to remove or install the valve assemblies.	
90890-04058	Middle driven shaft bearing driver This tool is used to install the water pump seal.	
90890-04064	Valve guide remover (ø6) This tool is used to remove or install the valve guides.	
90890-04065	Valve guide installer (ø6) This tool is used to install the valve guides.	
90890-04066	Valve guide reamer (ø6) This tool is used to rebore the new valve guides.	
90890-04081	Spacer (crankshaft installer) This tool is used to install the crankshaft.	
90890-04108	Valve spring compressor attachment This tool is used to remove or install the valve assemblies.	
90890-04132	Mechanical seal installer This tool is used to install the water pump seal.	

Tool No.	Tool name/Function	Illustration
90890-06754	Ignition checker This tool is used to check the ignition system components.	
90890-06756	Vacuum/pressure pump gauge set This tool is used to check the air cut-off valve.	
90890-11098	Fuel sender removal tool This tool are used to remove the fuel sender.	
90890-85505	Yamaha bond No. 1215 This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces).	

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS 2-1

ENGINE SPECIFICATIONS 2-2

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CHASSIS LUBRICATION POINTS AND LUBRICANT TYPES 2-24

COOLING SYSTEM DIAGRAMS 2-25

CABLE ROUTING 2-26

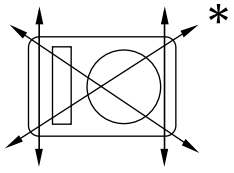
SPECIFICATIONS

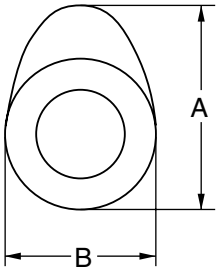
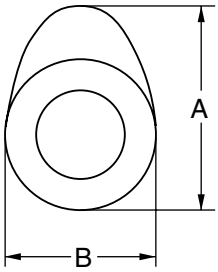
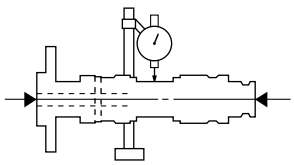
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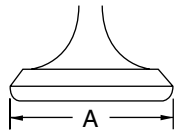
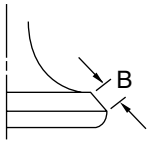
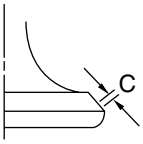
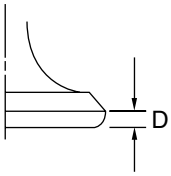
Item	Standard
Model code	1C01
Dimensions	
Overall length	2,210 mm (87.0 in)
Overall width	790 mm (31.1 in)
Overall height	1,380 mm (54.3 in)
Seat height	775 mm (30.5 in)
Wheelbase	1,545 mm (60.8 in)
Minimum ground clearance	113 mm (4.45 in)
Minimum turning radius	3,600 mm (143.7 in)
Weight	
Wet (with oil and a full fuel tank)	176 kg (388 lb)
Maximum load (total of cargo, rider, passenger, and accessories)	180 kg (397 lb)

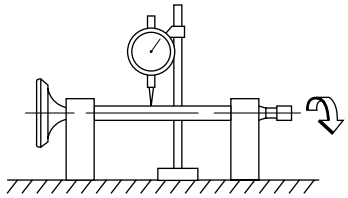
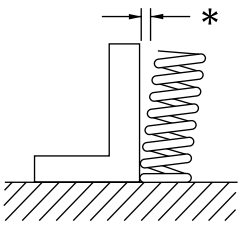
ENGINE SPECIFICATIONS

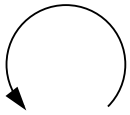
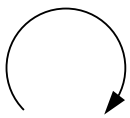
Item	Standard	Limit
Engine		
Engine type	Liquid cooled 4-stroke, SOHC	----
Displacement	249.7 cm^3	----
Cylinder arrangement	Forward-inclined single cylinder	----
Bore × stroke	69.0 × 66.8 mm (2.72 × 2.63 in)	----
Compression ratio	10.00 :1	----
Standard compression pressure (at sea level)	1,400 kPa (14.0 kgf/cm^2, 199.1 psi) at 500 r/min	----
Starting system	Electric starter	----
Fuel		
Recommended fuel	Regular unleaded gasoline only	----
Fuel tank capacity		
Total (including reserve)	13.0 L (2.86 Imp.gal, 3.43 US gal)	----
Fuel reserve amount	2.0 L (0.44 Imp.gal, 0.53 US gal)	----
Engine oil		
Lubrication system	Wet sump	----
Recommended oil type	SAE10W30, SAE10W40, SAE15W40, SAE20W40, or SAE20W50	----
Recommended engine oil grade	API service SG type or higher, JASO standard MA	----
Quantity		
Total amount	1.40 L (1.23 Imp.qt, 1.48 US qt)	----
Periodic oil change	1.20 L (1.06 Imp.qt, 1.27 US qt)	----
Oil temperature	65 ~ 75 °C (149 ~ 167 °F)	----
Final transmission oil		
Type	SAE10W30 type SE motor oil	----
Oil quantity	0.25 L (0.22 Imp.qt, 0.26 US qt)	----

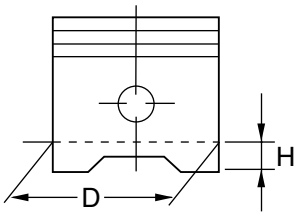
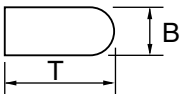
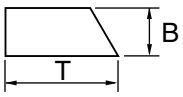
Item	Standard	Limit
Oil pump		
Oil pump type	Trochoid	----
Inner-rotor-to-outer-rotor-tip clearance	Less than 0.15 mm (0.0059 in)	0.23 mm (0.0091 in)
Outer-rotor-to-oil-pump-housing clearance	0.013 ~ 0.036 mm (0.0005 ~ 0.0014 in)	0.106 mm (0.0042 in)
Oil-pump-housing-to-inner-and-outer-rotor clearance	0.04 ~ 0.09 mm (0.0016 ~ 0.0035 in)	0.16 mm (0.0063 in)
Cooling system		
Radiator and engine capacity	0.70 L (0.62 Imp.qt, 0.74 US qt)	----
Radiator capacity	0.34 L (0.30 Imp.qt, 0.36 US qt)	----
Radiator core		
Width	229.0 mm (9.02 in)	----
Height	111.5 mm (4.39 in)	----
Depth	33.0 mm (1.30 in)	----
Coolant reservoir capacity (up to the maximum level mark)	0.26 L (0.23 Imp.qt, 0.28 US qt)	----
Water pump		
Water pump type	Single suction centrifugal pump	----
Reduction ratio	37/22 × 25/37 (1.136)	----
Impeller shaft tilt limit	----	0.15 mm (0.0059 in)
Coolant temperature	80 ~ 90 °C (176 ~ 194 °F)	----
Spark plug		
Manufacturer/model × quantity	NGK/DR8EA × 1	----
Spark plug gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	----
Cylinder head		
Maximum warpage * 	----	0.05 mm (0.0020 in)

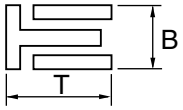
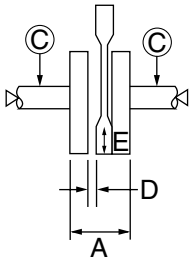
Item	Standard	Limit
Camshaft		
Drive system	Chain drive (left)	----
Intake camshaft lobe dimensions 		
Measurement A	37.051 ~ 37.151 mm (1.4587 ~ 1.4626 in)	36.956 mm (1.4550 in)
Measurement B	30.074 ~ 30.174 mm (1.1840 ~ 1.1880 in)	29.973 mm (1.1800 in)
Exhaust camshaft lobe dimensions 		
Measurement A	37.053 ~ 37.153 mm (1.4588 ~ 1.4627 in)	36.956 mm (1.4550 in)
Measurement B	30.091 ~ 30.191 mm (1.1847 ~ 1.1886 in)	29.194 mm (1.1494 in)
Maximum camshaft runout 	----	0.030 mm (0.0012 in)
Timing chain		
Model/number of links	DID SC.A-0404A SV/104	----
Tensioning system	Automatic	----
Rocker arms/rocker arm shafts		
Rocker arm inside diameter	12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in)	12.030 mm (0.4736 in)
Rocker arm shaft outside diameter	11.981 ~ 11.991 mm (0.4717 ~ 0.4721 in)	11.950 mm (0.4705 in)
Rocker-arm-to-rocker-arm-shaft clearance	0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.080 mm (0.0031 in)

Item	Standard	Limit
Valves, valve seats, valve guides		
Valve clearance (cold)		
Intake	0.08 ~ 0.12 mm (0.0031 ~ 0.0047 in)	----
Exhaust	0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)	----
Valve dimensions		
 Head Diameter  Face Width  Seat Width  Margin Thickness		
Valve head diameter A		
Intake	33.90 ~ 34.10 mm (1.3346 ~ 1.3425 in)	----
Exhaust	28.40 ~ 28.60 mm (1.1181 ~ 1.1260 in)	----
Valve face width B		
Intake	3.394 ~ 3.960 mm (0.1336 ~ 0.1559 in)	----
Exhaust	3.394 ~ 3.960 mm (0.1336 ~ 0.1559 in)	----
Valve seat width C		
Intake	0.90 ~ 1.10 mm (0.0354 ~ 0.0433 in)	1.6 mm (0.06 in)
Exhaust	0.90 ~ 1.10 mm (0.0354 ~ 0.0433 in)	1.6 mm (0.06 in)
Valve margin thickness D		
Intake	0.80 ~ 1.20 mm (0.0315 ~ 0.0472 in)	0.5 mm (0.02 in)
Exhaust	0.80 ~ 1.20 mm (0.0315 ~ 0.0472 in)	0.5 mm (0.02 in)
Valve stem diameter		
Intake	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)	5.940 mm (0.2339 in)
Exhaust	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)	5.920 mm (0.2331 in)
Valve guide inside diameter		
Intake	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)	6.050 mm (0.2382 in)
Exhaust	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)	6.050 mm (0.2382 in)
Valve-stem-to-valve-guide clearance		
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.080 mm (0.0031 in)
Exhaust	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)	0.100 mm (0.0039 in)

Item	Standard	Limit
Valve stem runout 	----	0.010 mm (0.0004 in)
Cylinder head valve seat width		
Intake	0.90 ~ 1.10 mm (0.0354 ~ 0.0433 in)	1.6 mm (0.06 in)
Exhaust	0.90 ~ 1.10 mm (0.0354 ~ 0.0433 in)	1.6 mm (0.06 in)
Valve springs		
Inner spring		
Free length		
Intake	38.10 mm (1.50 in)	36.10 mm (1.42 in)
Exhaust	38.10 mm (1.50 in)	36.10 mm (1.42 in)
Installed length (valve closed)		
Intake	30.10 mm (1.19 in)	----
Exhaust	30.10 mm (1.19 in)	----
Spring rate - intake (K1)	10.29 N/mm (1.05 kgf/mm, 58.75 lb/in)	----
Spring rate - intake (K2)	13.37 N/mm (1.36 kgf/mm, 76.34 lb/in)	----
Spring rate - exhaust (K1)	10.29 N/mm (1.05 kgf/mm, 58.75 lb/in)	----
Spring rate - exhaust (K2)	13.37 N/mm (1.36 kgf/mm, 76.34 lb/in)	----
Compression spring force (installed)		
Intake	76 ~ 88 N (7.80 ~ 9.00 kgf, 17.20 ~ 19.85 lbf)	----
Exhaust	76 ~ 88 N (7.80 ~ 9.00 kgf, 17.20 ~ 19.85 lbf)	----
Spring tilt ∗ 		
Intake	----	2.5°/1.7 mm (2.5°/0.067 in)
Exhaust	----	2.5°/1.7 mm (2.5°/0.067 in)

Item	Standard	Limit
Winding direction (top view)		
Intake	Counterclockwise	----
Exhaust	Counterclockwise	----
		
Outer spring		
Free length		
Intake	36.93 mm (1.45 in)	35.00 mm (1.38 in)
Exhaust	36.93 mm (1.45 in)	35.00 mm (1.38 in)
Installed length (valve closed)		
Intake	31.60 mm (1.24 in)	----
Exhaust	31.60 mm (1.24 in)	----
Spring rate - intake (K1)	23.18 N/mm (2.36 kgf/mm, 132.36 lb/in)	----
Spring rate - intake (K2)	31.66 N/mm (3.23 kgf/mm, 180.78 lb/in)	----
Spring rate - exhaust (K1)	23.18 N/mm (2.36 kgf/mm, 132.36 lb/in)	----
Spring rate - exhaust (K2)	31.66 N/mm (3.23 kgf/mm, 180.78 lb/in)	----
Compression spring force (installed)		
Intake	115 ~ 133 N (11.73 ~ 13.56 kgf, 25.85 ~ 29.90 lbf)	----
Exhaust	115 ~ 133 N (11.73 ~ 13.56 kgf, 25.85 ~ 29.90 lbf)	----
Spring tilt		
Intake	----	2.5°/1.6 mm (2.5°/0.063 in)
Exhaust	----	2.5°/1.6 mm (2.5°/0.063 in)
Winding direction		
Intake	Clockwise	----
Exhaust	Clockwise	----
		
Cylinder		
Bore	69.000 ~ 69.005 mm (2.7165 ~ 2.7167 in)	69.100 mm (2.7205 in)
Maximum taper	----	0.050 mm (0.0020 in)
Maximum out of round	----	0.030 mm (0.0012 in)

Item	Standard	Limit
Piston		
Piston-to-cylinder clearance	0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in)	0.15 mm (0.0059 in)
Diameter D	68.965 ~ 68.980 mm (2.7152 ~ 2.7157 in)	----
		
Height H	5.0 mm (0.20 in)	----
Piston pin bore (in the piston)		
Diameter	17.004 ~ 17.015 mm (0.6694 ~ 0.6699 in)	17.045 mm (0.6711 in)
Offset	0.50 mm (0.0197 in)	----
Offset direction	Intake side	----
Piston pin		
Outside diameter	16.991 ~ 17.000 mm (0.6689 ~ 0.6693 in)	16.971 mm (0.6681 in)
Piston-pin-to-piston-pin-bore clearance	0.004 ~ 0.024 mm (0.0002 ~ 0.0009 in)	0.074 mm (0.0029 in)
Piston rings		
Top ring		
		
Ring type	Barrel	----
Dimensions (B × T)	1.00 × 2.60 mm (0.04 × 0.10 in)	----
End gap (installed)	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	0.45 mm (0.0177 in)
Ring side clearance	0.040 ~ 0.080 mm (0.0016 ~ 0.0031 in)	0.120 mm (0.0047 in)
2nd ring		
		
Ring type	Taper	----
Dimensions (B × T)	1.00 × 2.90 mm (0.04 × 0.11 in)	----
End gap (installed)	0.30 ~ 0.45 mm (0.0118 ~ 0.0177 in)	0.70 mm (0.0276 in)
Ring side clearance	0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in)	0.120 mm (0.0047 in)

Item	Standard	Limit
Oil ring  		
Dimensions (B × T)	1.50 × 2.50 mm (0.06 × 0.10 in)	----
End gap (installed)	0.20 ~ 0.70 mm (0.0079 ~ 0.0276 in)	----
Ring side clearance	0.060 ~ 0.150 mm (0.0024 ~ 0.0059 in)	----
Crankshaft  		
Width A	59.75 ~ 59.80 mm (2.352 ~ 2.354 in)	----
Maximum runout C	----	0.030 mm (0.0012 in)
Big end side clearance D	0.350 ~ 0.850 mm (0.0138 ~ 0.0335 in)	----
Big end radial clearance E	0.010 ~ 0.025 mm (0.0004 ~ 0.0010 in)	----
Automatic centrifugal clutch		
Clutch type	Dry, centrifugal automatic	----
Clutch shoe thickness	3.3 mm (0.13 in)	2.0 mm (0.08 in)
Clutch shoe spring free length	31.3 mm (1.23 in)	----
Clutch housing inside diameter	145.0 mm (5.71 in)	145.5 mm (5.73 in)
Compression spring free length	102.4 mm (4.03 in)	90.0 mm (3.54 in)
Primary sheave weight outside diameter	20.0 mm (0.79 in)	19.5 mm (0.77 in)
Clutch-in revolution	2,250 ~ 2,850 r/min	----
Clutch-stall revolution	3,700 ~ 4,700 r/min	----
V-belt		
V-belt width	23.0 mm (0.91 in)	21.0 mm (0.83 in)
Transmission		
Transmission type	V-belt automatic	----
Primary reduction system	Helical gear	----
Primary reduction ratio	40/15 (2.666)	----
Secondary reduction system	Helical gear	----
Secondary reduction ratio	40/14 (2.857)	----
Operation	Centrifugal automatic type	----
Single speed automatic	2.44 ~ 0.83 : 1	----

Item	Standard	Limit
Air filter		
Air filter element	Oil-coated paper element	----
Fuel pump		
Pump type	Electrical	----
Model/manufacturer	2GV0/MITSUBISHI	----
Output pressure	12.5 kPa (0.13 kgf/cm^2, 1.8 psi)	----
Carburetor		
Type × quantity	1C0 × 1	----
Manufacturer	KEIHIN	----
ID mark	1C0D	----
Main jet	#122	----
Main air jet	#90	----
Jet needle	N425-DVD00	----
Needle jet	2.6	----
Pilot air jet 1	#125	----
Pilot outlet	0.85	----
Pilot jet	#35	----
Bypass 1	0.7	----
Bypass 2	0.7	----
Bypass 3	0.7	----
Bypass 4	0.7	----
Pilot screw turns out	2	----
Valve seat size	1.6	----
Starter jet 1	#38	----
Throttle valve size	10	----
Float height	17.5 mm (0.69 in)	----
Idling condition		
Engine idling speed	1,550 ~ 1,650 r/min	----
CO density (when air induction system is operating)	4.0%	----
CO density (when air induction system is not operating)	6.0%	----
Throttle cable free play	4.0 ~ 6.0 mm (0.16 ~ 0.24 in)	----

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Frame		
Frame type	Steel tube underbone	----
Caster angle	28.00°	----
Trail	100.0 mm (3.94 in)	----
Front wheel		
Wheel type	Cast wheel	----
Rim		
Size	15 × MT3.50	----
Material	Aluminum	----
Wheel travel	94.0 mm (3.70 in)	----
Wheel runout		
Maximum radial wheel runout	----	1.0 mm (0.04 in)
Maximum lateral wheel runout	----	0.5 mm (0.02 in)
Wheel axle bending limit	----	0.03 mm (0.0012 in)
Rear wheel		
Wheel type	Cast wheel	----
Rim		
Size	14 × MT3.75	----
Material	Aluminum	----
Wheel travel	83.0 mm (3.27 in)	----
Wheel runout		
Maximum radial wheel runout	----	1.0 mm (0.04 in)
Maximum lateral wheel runout	----	0.5 mm (0.02 in)
Front tire		
Tire type	Tubeless	----
Size	120/70-15 M/C 56S or 56P	----
Manufacturer/model	MICHELIN/GOLD STANDARD PIRELLI/GTS23	----
Tire pressure (cold)		
0 ~ 90 kg (0 ~ 198 lb)	190 kPa (1.90 kgf/cm^2, 28 psi)	----
90 ~ 235 kg (198 ~ 518 lb)	210 kPa (2.10 kgf/cm^2, 30 psi)	----
Maximum tire tread depth	----	1.6 mm (0.06 in)

Item	Standard	Limit
Rear tire		
Tire type	Tubeless	----
Size	140/70-14 M/C 68S or 68P	----
Manufacturer/model	MICHELIN/GOLD STANDARD PIRELLI/GTS24	----
Tire pressure (cold)		
0 ~ 90 kg (0 ~ 198 lb)	220 kPa (2.20 kgf/cm^2, 32 psi)	----
90 ~ 180 kg (198 ~ 397 lb)	250 kPa (2.50 kgf/cm^2, 36 psi)	----
Maximum tire tread depth	----	1.6 mm (0.06 in)
Front brake		
Brake type	Single disc brake	----
Operation	Right hand operation	----
Recommended fluid	DOT 4	----
Brake disc		
Diameter × thickness	267.0 × 5.0 mm (10.51 × 0.20 in)	----
Minimum thickness	----	4.5 mm (0.18 in)
Maximum deflection	----	0.20 mm (0.0079 in)
Brake pad lining thickness (inner)	4.5 mm (0.18 in)	0.5 mm (0.02 in)
Brake pad lining thickness (outer)	4.5 mm (0.18 in)	0.5 mm (0.02 in)
Master cylinder inside diameter	12.70 mm (0.50 in)	----
Caliper cylinder inside diameter	25.00 mm × 1 and 28.00 mm × 1 (0.98 in × 1 and 1.10 in × 1)	----
Rear brake		
Brake type	Single disc brake	----
Operation	Left hand operation	----
Recommended fluid	DOT 4	----
Brake disc		
Diameter × thickness	240.0 × 5.0 mm (9.45 × 0.20 in)	----
Minimum thickness	----	4.5 mm (0.18 in)
Maximum deflection	----	0.20 mm (0.0079 in)
Brake pad lining thickness (inner)	5.3 mm (0.21 in)	0.8 mm (0.03 in)
Brake pad lining thickness (outer)	5.3 mm (0.21 in)	0.8 mm (0.03 in)
Master cylinder inside diameter	11.0 mm (0.43 in)	----
Caliper cylinder inside diameter	22.20 mm × 2 (0.87 in × 2)	----

Item	Standard	Limit
Steering		
Steering bearing type	Angular bearing	----
Center to lock angle (left)	62.0°	----
Center to lock angle (right)	62.0°	----
Front suspension		
Suspension type	Telescopic fork	----
Front fork type	Coil spring/oil damper	----
Front fork travel	110.0 mm (4.33 in)	----
Spring		
Free length	308.0 mm (12.126 in)	301.87 mm (11.885 in)
Installed length	277.4 mm (10.921 in)	----
Spring rate (K1)	8.00 N/mm (0.82 kgf/mm, 45.68 lb/in)	----
Spring rate (K2)	13.60 N/mm (1.39 kgf/mm, 77.65 lb/in)	----
Spring stroke (K1)	0 ~ 80.0 mm (0 ~ 3.15 in)	----
Spring stroke (K2)	80.0 ~ 110.0 mm (3.15 ~ 4.33 in)	----
Inner tube outer diameter	36.0 mm (1.42 in)	----
Inner tube bending limit	----	0.2 mm (0.008 in)
Optional spring available	No	----
Fork oil		
Recommended oil	Fork oil 15W or equivalent	----
Quantity (each front fork leg)	195.0 cm^3 (6.86 Imp.oz, 6.59 US oz)	----
Level (from the top of the inner tube, with the inner tube fully compressed, and without the fork spring)	105.0 mm (4.13 in)	----

Item	Standard	Limit
Rear suspension		
Suspension type	Unit swing	----
Rear shock absorber type	Coil spring/oil damper	----
Rear shock absorber assembly travel	95.0 mm (3.74 in)	----
Spring		
Free length	270.1 mm (10.63 in)	264.7 mm (10.42 in)
Installed length	249 mm (9.80 in)	----
Spring rate (K1)	8.00 N/mm (0.82 kgf/mm, 45.68 lb/in)	----
Spring rate (K2)	13.70 N/mm (1.40 kgf/mm, 78.23 lb/in)	----
Spring rate (K3)	20.30 N/mm (2.07 kgf/mm, 115.91 lb/in)	----
Spring stroke (K1)	0 ~ 42.0 mm (0 ~ 1.65 in)	----
Spring stroke (K2)	42.0 ~ 72.5 mm (1.65 ~ 2.85 in)	----
Spring stroke (K3)	72.5 ~ 95.0 mm (2.85 ~ 3.74 in)	----
Optional spring available	No	----
Spring preload adjusting positions		
Minimum	1	----
Standard	1	----
Maximum	4	----

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
System voltage	12 V	
Ignition system		----
Ignition system type	CDI	----
Ignition timing (B.T.D.C.)	10.0°	----
Advancer type	Digital	----
Pickup coil resistance	130 ~ 150 Ω	----
CDI unit model/manufacturer	5510-F/MITSUBA	----
Ignition coil		
Model/manufacturer	4719/MITSUBA	----
Minimum ignition spark gap	6 mm (0.24 in)	----
Primary coil resistance	0.225 ~ 0.275 Ω at 25 °C (77 °F)	----
Secondary coil resistance	1.89 ~ 2.31 kΩ at 25 °C (77 °F)	----
Spark plug cap		
Material	Resin	----
Resistance	10.0 kΩ	----
Charging system		
System type	AC magneto	
Model/manufacturer	5425-H/Mitsuba	----
Standard output	14.0 V, 235 W at 5,000 r/min	----
Stator coil resistance	0.385 ~ 0.415 Ω at 20 °C (68 °F)	----
Rectifier/regulator		
Regulator type	Semi conductor-short circuit	----
Model/manufacturer	SH678-11/SHINDENGEN	----
No-load regulated voltage	14.1 ~ 14.9 V	----
Rectifier capacity	22.0 A	----
Withstand voltage	200.0 V	----
Battery		
Model	YTX9-BS	----
Voltage, capacity	12 V, 8.0 Ah	----
Manufacturer	YUASA	----
Ten hour rate amperage	0.8 A	----
Headlight		
Bulb type	Halogen bulb	----
Bulb (voltage, wattage × quantity)		
Headlight	12 V, 35.0 W/35.0 W × 2	----
Auxiliary light	12 V, 5.0 W × 2	----
Tail/brake light	12 V, 5.0 W/21.0 W × 2	----
Front turn signal light	12 V, 10.0 W × 2	----
Rear turn signal light	12 V, 10.0 W × 2	----
License plate light	12 V, 5.0 W × 1	----

Item	Standard	Limit
Indicator light		
Meter lighting	LED × 1	----
Turn signal indicator light	LED × 2	----
High beam indicator light	LED × 1	----
Fuel level warning light	LED × 1	----
Immobilizer system indicator light	LED × 1	----
Electric starting system		
System type	Constant mesh	----
Starter motor		
Model/manufacturer	SM-13/MITSUBA	----
Power output	0.65 kW	----
Brush		
Overall length	10.0 mm (0.39 in)	4.0 mm (0.16 in)
Spring force	7.65 ~ 10.01 N (780 ~ 1,021 gf, 27.5 ~ 36.0 oz)	----
Armature coil resistance	0.0012 ~ 0.0022 Ω at 20 °C (68 °F)	----
Commutator diameter	28.0 mm (1.10 in)	27.0 mm (1.06 in)
Mica undercut (depth)	0.7 mm (0.028 in)	----
Starter relay		
Model/manufacturer	MS5F-631/JIDECO	----
Amperage	180.0 A	----
Coil resistance	4.18 ~ 4.62 Ω at 20 °C (68 °F)	----
Horn		
Horn type	Plane	----
Quantity	1 pc	----
Model/manufacturer	YF-12/NIKKO	----
Maximum amperage	3.0 A	----
Performance	105 ~ 113 dB/2 m	----
Coil resistance	1.15 ~ 1.25 Ω at 20 °C (68 °F)	----
Turn signal/hazard relay		
Relay type	Full transistor	----
Model/manufacturer	01 8610A/GUILERA	----
Built-in, self-canceling device	No	----
Turn signal blinking frequency	70.0 ~ 100.0 cycles/min	----
Wattage	10 W × 2.0 + 1.2 W	----
Fuel sender		
Model/manufacturer	1C0/BITRON	----
Sender unit resistance (full)	0 ~ 7 Ω	----
Sender unit resistance (empty)	90 ~ 103 Ω	----

Item	Standard	Limit
Starting circuit cut-off relay		
Model/manufacturer	ACA12115 M02	----
Coil resistance	72 ~ 88 Ω at 20 °C (68 °F)	----
Headlight relay		
Model/manufacturer	ACM33211 M05	----
Coil resistance	96 Ω at 20 °C (68 °F)	----
Fuel pump relay		
Model/manufacturer	ACM33211 M05	----
Coil resistance	96 Ω at 20 °C (68 °F)	----
Radiator fan motor relay		
Model/manufacturer	ACM33211 M05	----
Coil resistance	96 Ω at 20 °C (68 °F)	----
Coolant temperature sensor		
Model/manufacturer	C40 1734/PRICOL	----
Resistance at 80 °C (176 °F)	69.0 Ω	----
Resistance at 100 °C (212 °F)	37.2 Ω	----
Speed sensor		
Output voltage		
When sensor is on	DC 4.8 V or more	----
When sensor is off	DC 0.6 V or less	----
Fuses		
Main fuse	30.0 A	----
Headlight fuse	15.0 A	----
Signaling system fuse	15.0 A	----
Ignition fuse	5.0 A	----
Radiator fan motor fuse	10.0 A	----
CDI unit fuse	5.0 A	----
Backup fuse (meter assembly)	5.0 A	----
Reserve fuse	30.0 A	----
Reserve fuse	15.0 A	----
Reserve fuse	10.0 A	----
Reserve fuse	5.0 A	----

EAS00028
CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

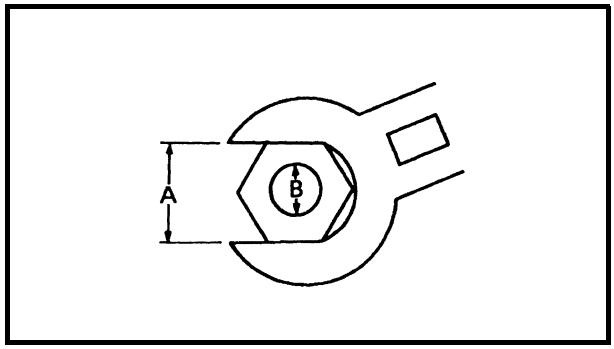
METRIC		MULTIPLIER		IMPERIAL
** mm	×	0.03937	=	** in
2 mm	×	0.03937	=	0.08 in

CONVERSION TABLE

METRIC TO IMPERIAL			
	Metric unit	Multiplier	Imperial unit
Tightening torque	m·kg m·kg cm·kg cm·kg	7.233 86.794 0.0723 0.8679	ft·lb in·lb ft·lb in·lb
Weight	kg g	2.205 0.03527	lb oz
Speed	km/hr	0.6214	mph
Distance	km m m cm mm	0.6214 3.281 1.094 0.3937 0.03937	mi ft yd in in
Volume/ Capacity	cc (cm^3) cc (cm^3) lt (liter) lt (liter)	0.03527 0.06102 0.8799 0.2199	oz (IMP lip.) cu.in qt (IMP liq.) gal (IMP liq.)
Misc.	kg/mm kg/cm^2 Centigrade (°C)	55.997 14.2234 9/5+32	lb/in psi (lb/in^2) Fahrenheit (°F)

EAS00029
GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats
B: Outside thread diameter

A (nut)	B (bolt)	General tightening torques		
		Nm	m · kg	ft · lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

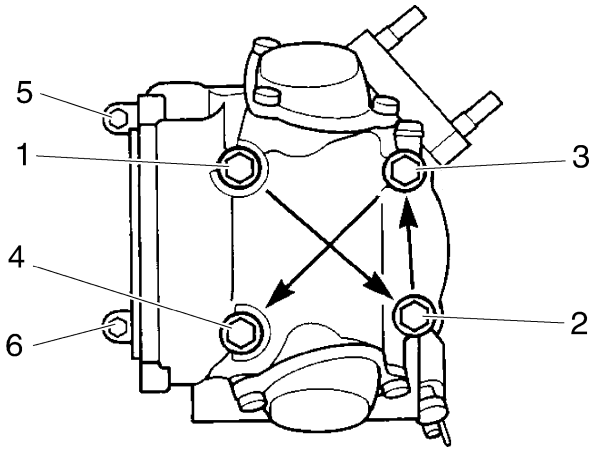
TIGHTENING TORQUES

ENGINE TIGHTENING TORQUES

Item	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Oil check bolt	Bolt	M6	1	7	0.7	5.1	
Exhaust pipe stud bolt	Bolt	M8	2	13	1.3	9.4	
Air induction system pipe stud bolt	Bolt	M6	2	10	1.0	7.2	
Spark plug	—	M12	1	18	1.8	13	
Camshaft sprocket cover	Bolt	M6	2	10	1.0	7.2	
Cylinder head and cylinder	Nut	M8	4	22	2.2	16	See page 2-20 for tightening sequence.
Cylinder head and cylinder	Bolt	M6	2	10	1.0	7.2	
Tappet cover	Bolt	M6	5	10	1.0	7.2	
Generator rotor	Nut	M16	1	80	8.0	58	
Valve clearance adjusting screw lock-nut	Nut	M6	2	14	1.4	10	
Camshaft retainer	Bolt	M6	2	8	0.8	5.8	
Camshaft sprocket	Bolt	M10	1	60	6.0	43	
Timing chain tensioner	Bolt	M6	2	10	1.0	7.2	
Timing chain tensioner cap bolt	Bolt	M8	1	8	0.8	5.8	
Timing chain guide (intake side)	Bolt	M6	1	10	1.0	7.2	
Water pump housing cover	Bolt	M6	2	10	1.0	7.2	
Water pump housing	Bolt	M6	2	10	1.0	7.2	
Coolant drain bolt	Bolt	M6	1	10	1.0	7.2	
Water pump outlet pipe	Bolt	M6	2	7	0.7	5.1	
Thermostat cover	Bolt	M6	2	10	1.0	7.2	
Oil pump assembly	Bolt	M6	2	7	0.7	5.1	
Oil strainer cover	—	M35	1	32	3.2	23	
Intake manifold	Bolt	M6	2	10	1.0	7.2	
Carburetor clamp screw	Screw	M6	1	2	0.2	1.4	
Throttle cable bracket	Bolt	M5	2	11	1.1	8.0	
Air induction system pipe	Nut	M6	2	12	1.2	8.7	
Air cut-off valve assembly	Bolt	M6	2	10	1.0	7.2	
Air cut-off valve assembly bracket	Bolt	M6	2	10	1.0	7.2	
Crankcase	Bolt	M6	7	10	1.0	7.2	
Cylinder head stud bolt	Bolt	M8	4	13	1.3	9.4	
Engine oil drain bolt	Bolt	M12	1	20	2.0	14	
Final transmission oil drain bolt	Bolt	M8	1	22	2.2	16	
Final transmission oil filler plug	—	M14	1	3	0.3	1.4	
Transmission case cover	Bolt	M8	6	16	1.6	11	
V-belt case	Bolt	M6	11	10	1.0	7.2	
V-belt case cover	Screw	M6	4	7	0.7	5.1	
Generator cover	Bolt	M6	10	10	1.0	7.2	
Oil baffle plate	Bolt	M6	2	12	1.2	8.7	

Item	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Timing mark accessing plug	—	M16	1	8	0.8	5.8	
Starter clutch	Bolt	M8	3	30	3.0	22	
Secondary sheave	Nut	M14	1	60	6.0	43	
Primary sheave cap	Screw	M4	4	3	0.3	2.2	
Primary sheave	Nut	M14	1	80	8.0	58	
Clutch carrier	Nut	M36	1	90	9.0	65	
Secondary sheave bracket	Bolt	M8	4	22	2.2	16	
Stator coil	Bolt	M6	3	10	1.0	7.2	
Pickup coil	Bolt	M5	2	7	0.7	5.1	
Starter motor	Bolt	M6	2	10	1.0	7.2	
Coolant temperature sensor	—	Pt 1/8	1	8	0.8	5.8	
Air filter case mounting bolt	Bolt	M6	2	9	0.9	6.5	
Exhaust pipe nut	Nut	M8	2	20	2.0	14	
Muffler mounting bolt	Bolt	M12	3	65	6.5	47	
Muffler joint bolt	Bolt	M8	1	14	1.4	10	
Coolant reservoir	Bolt	M6	2	7	0.7	5.1	
Radiator	Bolt	M6	2	10	1.0	7.2	
Thermo switch (auto choke)	—	M18	1	30	3.0	22	
Thermo switch (radiator fan motor)	—	M18	1	30	3.0	22	

Cylinder head tightening sequence:



CHASSIS TIGHTENING TORQUES

Item	Thread size	Tightening torque			Remarks
		Nm	m · kg	ft · lb	
Frame and engine bracket	M12	59	5.9	43	
Frame and engine bracket rod	M10	64	6.4	46	
Engine bracket, engine bracket rod and engine	M10	32	3.2	23	
Frame and sidestand bolt	M10	23	2.3	17	
Frame and sidestand nut	M10	40	4.0	29	
Passenger footrest and frame	M8	25	2.5	18	
Grab bar and frame	M8	23	2.3	17	
Fuel tank and frame	M6	7	0.7	5.1	
Sidestand switch	M5	6	0.6	4.3	
Battery bracket and frame	M8	23	2.3	17	
Seat lock cable bracket and frame	M6	10	1.0	7.2	
Swingarm and engine	M10	59	5.9	43	
Rear brake hose holder and frame	M6	7	0.7	5.1	
Rear shock absorber and engine	M8	18	1.8	13	
Rear shock absorber and swingarm	M8	18	1.8	13	
Rear shock absorber and frame	M10	32	3.2	23	
Rear fender bracket and swingarm	M8	16	1.6	11	
Front wheel axle	M14	59	5.9	43	
Front wheel axle pinch bolt	M6	9	0.9	6.5	
Rear wheel axle nut	M14	135	13.5	98	
Front brake caliper and outer tube	M8	23	2.3	17	
Brake pad pin	M8	12	1.2	8.7	
Brake caliper retaining nut	M8	22	2.2	16	
Brake caliper housing bolt	M10	45	4.5	32	
Front brake disc and wheel hub	M6	12	1.2	8.7	
Rear brake disc and wheel hub	M8	23	2.3	17	
Brake hose union bolt	M10	23	2.3	17	
Bleed screw (front brake caliper)	M7	6	0.6	4.3	
Bleed screw (rear brake caliper)	M7	6	0.6	4.3	
Rear brake hose holder and frame	M6	7	0.7	5.1	
Rear brake caliper bracket and swingarm	M10	40	4.0	29	
Rear brake caliper retaining bolt	M10	27	2.7	19	
Steering stem nut	M20	120	12.0	85	
Upper handlebar holder and lower handlebar holder	M8	23	2.3	17	
Lower ring nut (initial tightening torque)	M25	38	3.8	27	See “NOTE”.
Lower ring nut (final tightening torque)	M25	22	2.2	16	See “NOTE”.
Upper ring nut	M25	75	7.5	54	See “NOTE”.
Lower bracket pinch bolt	M8	22	2.2	16	
Damper rod bolt	M10	28	2.8	20	
Front brake master cylinder and holder	M6	7	0.7	5.1	
Front brake master cylinder and brake lever	M6	10	1.0	7.2	

Item	Thread size	Tightening torque			Remarks
		Nm	m · kg	ft · lb	
Rear brake master cylinder and holder	M6	7	0.7	5.1	
Rear brake master cylinder and brake lever	M6	10	1.0	7.2	
Grip end	M16	26	2.6	19	
Front cowling inner panel and frame	M6	7	0.7	5.1	
Radiator cover and frame	M6	7	0.7	5.1	
Rear side cover (left and right) and frame	M6	7	0.7	5.1	
Mudguard and frame	M6	7	0.7	5.1	
Footrest board and frame	M6	7	0.7	5.1	
Storage compartment and frame	M6	7	0.7	5.1	

NOTE:

1. Tighten the lower ring nut 38 Nm (3.8 m · kg, 27 ft · lb) with a torque wrench and the steering nut wrench, and then loosen the nut 1/4 turn.
2. Tighten the lower ring nut 22 Nm (2.2 m · kg, 16 ft · lb) with a torque wrench and the steering nut wrench.
3. Install the rubber washer and the center ring nut.
4. Finger tighten the center ring nut, align the slots of both ring nuts, and then install the lock washer.
5. Hold the lower and center ring nuts, and then tighten the upper ring nut 75 Nm (7.5 m · kg, 54 ft · lb) with a torque wrench and the steering nut wrench.

EAS00031
LUBRICATION POINTS AND LUBRICANT TYPES
ENGINE LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication point	Lubricant
Oil seal lips	LS
Bearings	E
O-rings	LS
Cylinder head nut mounting surface	E
Crankshaft pin	E
Connecting rod big end thrust surface	E
Rotary filter inner surface	E
Oil pump drive gear inner surface	E
Timing chain sprocket inner surface	E
Piston pin	E
Piston, ring grooves, and piston rings	E
Cylinder inner surface	E
Camshaft lobes	M
Valve stems (intake and exhaust)	M
Valve stem ends (intake and exhaust)	M
Valve stem seals	M
Rocker arm shafts	E
Rocker arm inner surface	M
Oil pump assembly shaft	E
Oil pump assembly gasket	LS
Oil pump rotors (inner and outer)	E
Starter clutch idle gear thrust surfaces	E
Starter clutch idle gear shaft	E
Starter clutch gear thrust surfaces	E
Starter clutch gear inner surface	E
Main axle thrust surfaces	G
Main and drive axle serration	G
O-ring and collar (clutch housing)	LS
Primary sheave weights	Shell BT grease 3®
Secondary sheave	BEL-RAY assembly lube®
Oil seal (secondary sliding sheave)	BEL-RAY assembly lube®
Secondary sheave guide pins	BEL-RAY assembly lube®
Crankcase mating surfaces	Yamaha bond No. 1215

Lubrication point	Lubricant
Pickup coil/stator assembly lead grommet	Yamaha bond No. 1215

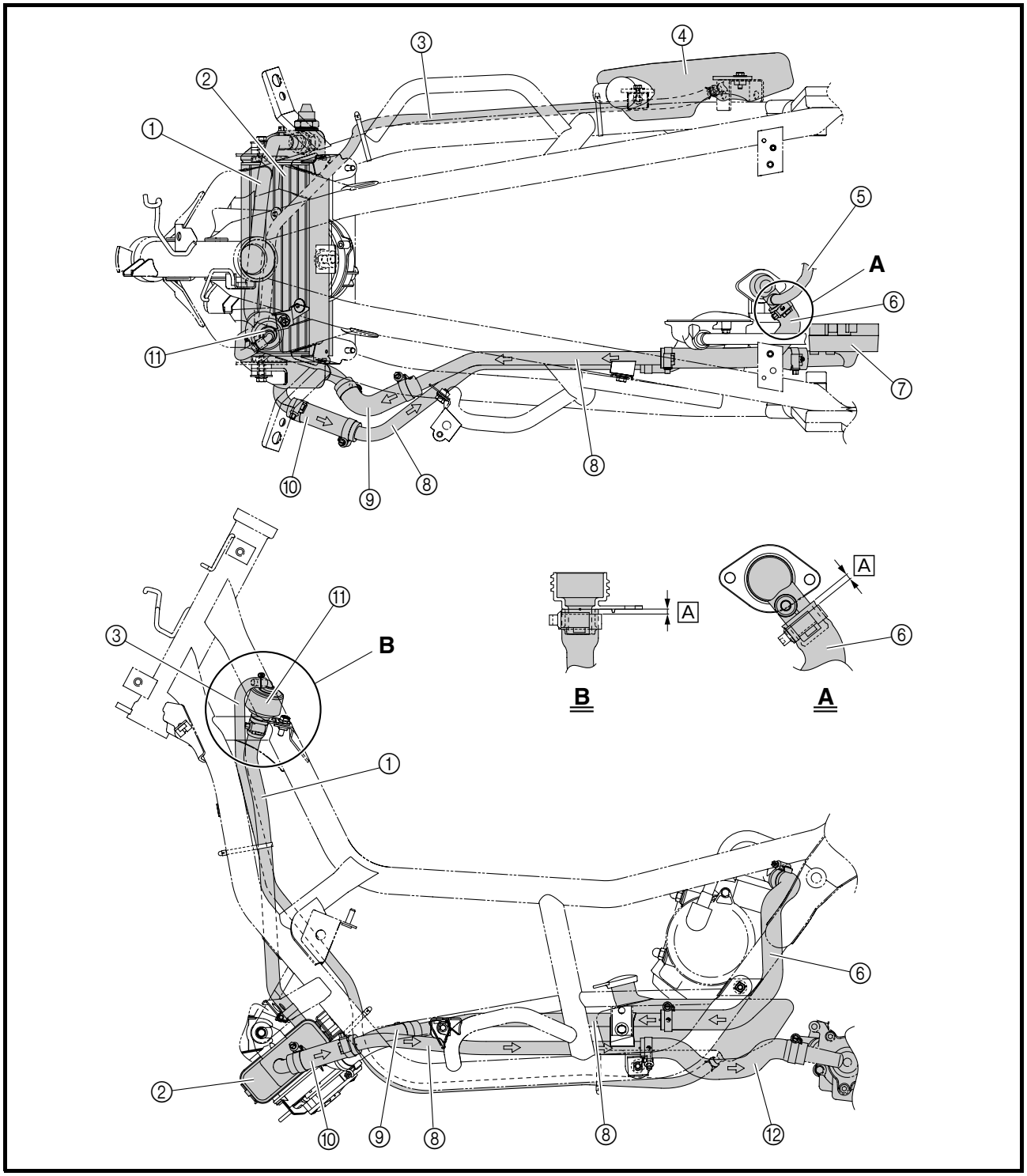
EAS00032
CHASSIS LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication Point	Symbol
Engine mounting bolt	
Swingarm oil seal lips	
Steering bearings (upper and lower)	
Throttle cable end	
Handlebar grip inner surface	Rubber adhesive
Throttle grip inner surface and throttle cables	
Seat hinge pin	
Seat damper	
Front wheel oil seal lip	
Speed sensor oil seal lip	
Sidestand pivoting point and metal-to-metal moving parts	
Centerstand shaft pivoting point and metal-to-metal moving parts	
Centerstand stopper pivoting point	
Centerstand and sidestand spring hook metal-to-metal moving parts	

COOLING SYSTEM DIAGRAMS

① Radiator filler hose
② Radiator
③ Coolant reservoir hose
④ Coolant reservoir
⑤ Thermostat inlet hose
⑥ Thermostat outlet hose
⑦ Water pump
⑧ Radiator inlet/outlet pipe
⑨ Radiator inlet hose
⑩ Radiator outlet hose
⑪ Radiator cap
⑫ Water pump inlet hose

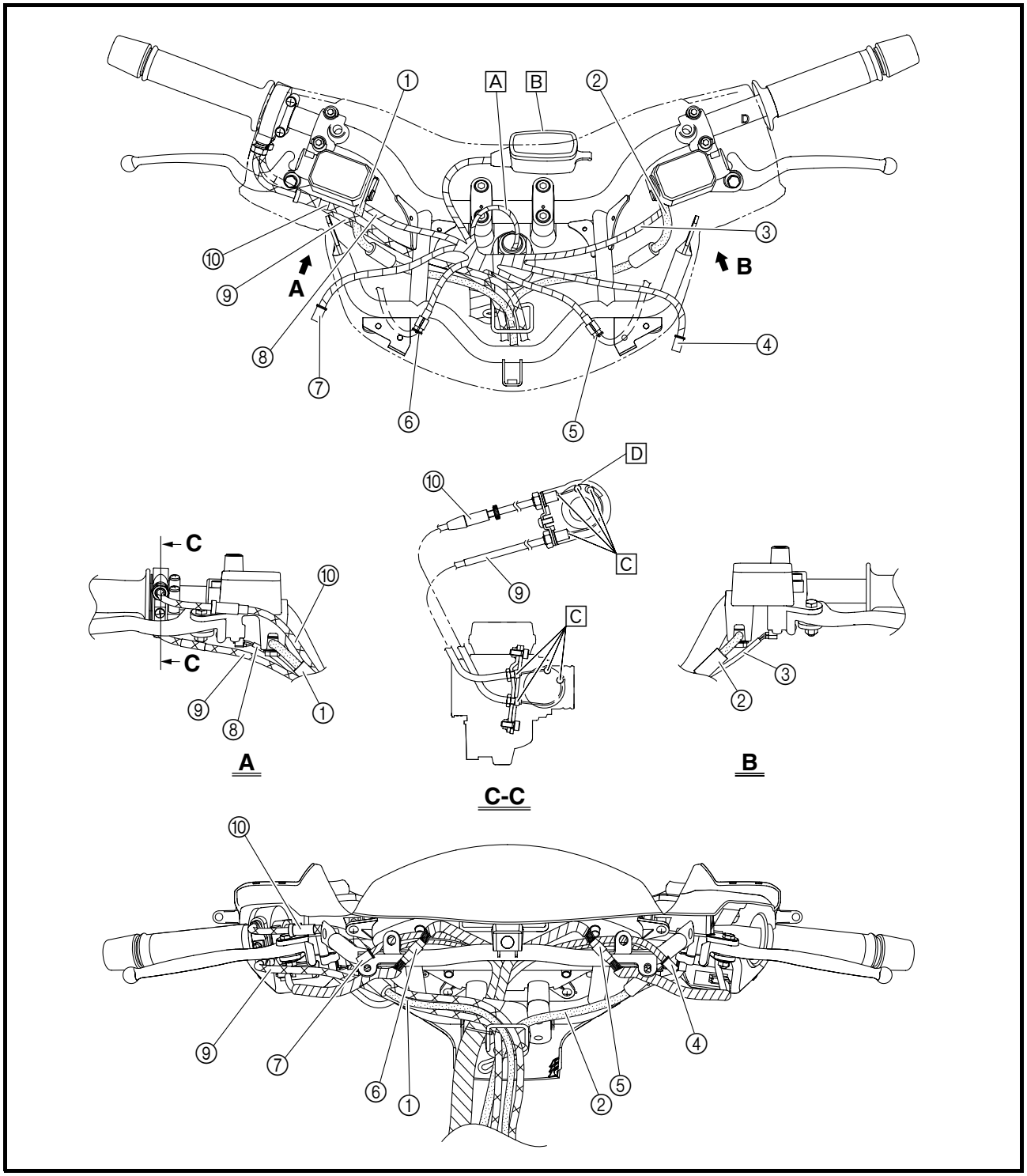
A 3 ~ 4 mm (0.12 ~ 0.16 in)



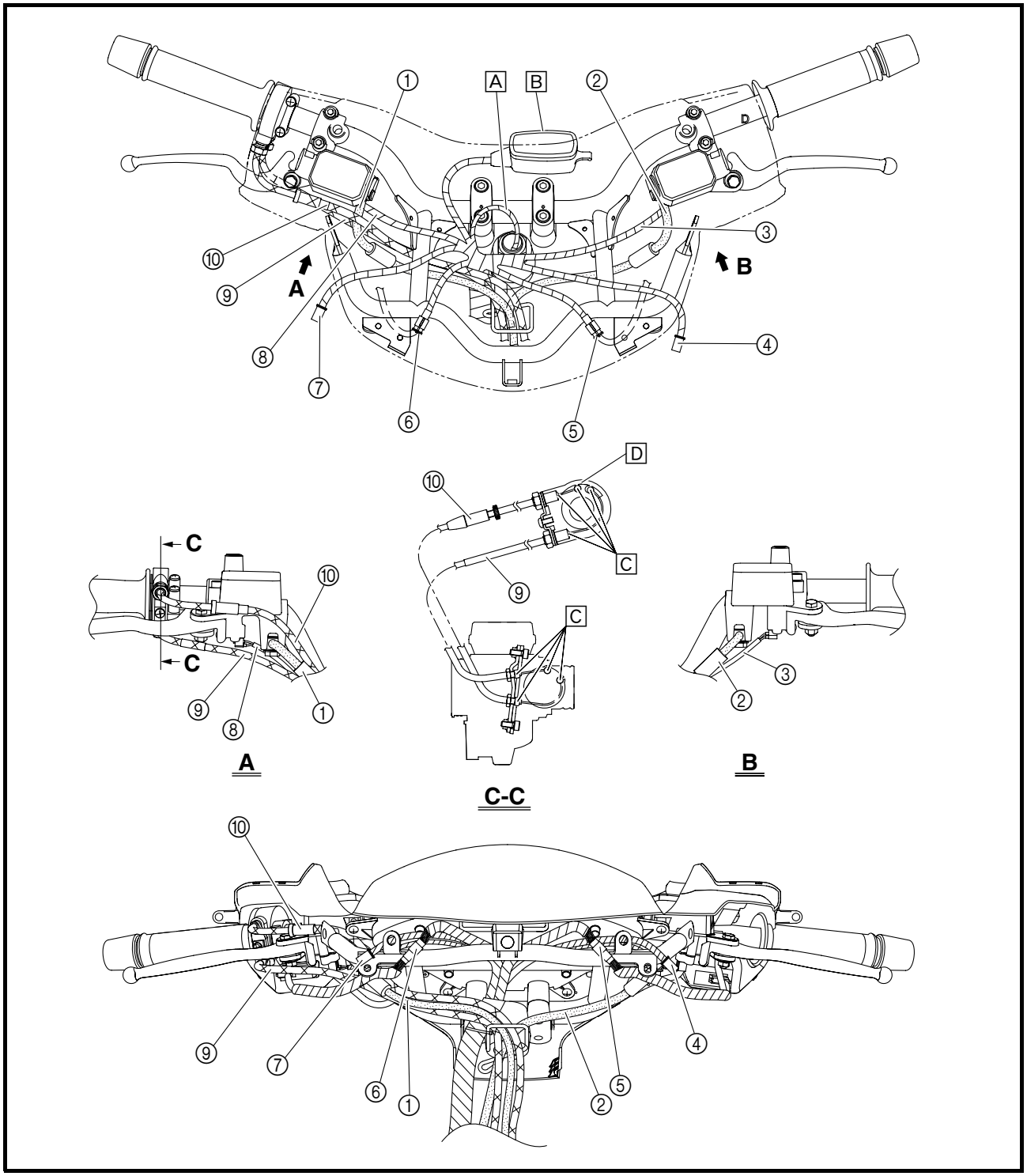
EAS00035
CABLE ROUTING

① Front brake hose
② Rear brake hose
③ Rear brake light switch lead
④ Front turn signal light coupler (left)
⑤ Handlebar upper cover left switches coupler
⑥ Handlebar upper cover right switches coupler
⑦ Front turn signal light coupler (right)
⑧ Front brake light switch lead
⑨ Throttle cable (decelerator cable)
⑩ Throttle cable (accelerator cable)

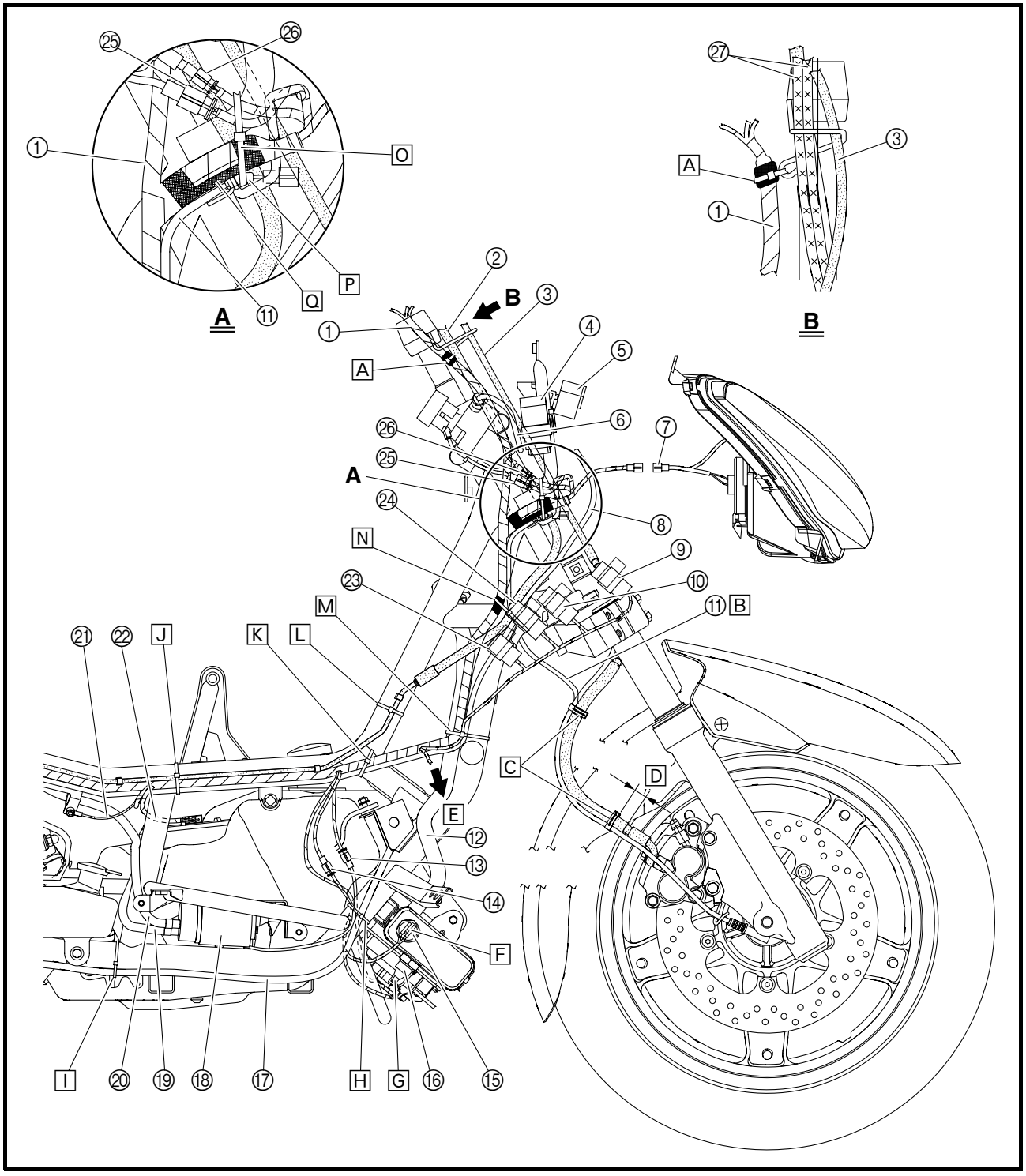
A Connect the air temperature sensor coupler, and then place the air temperature sensor in the steering head pipe.
B Connect the meter assembly coupler, and then install the rubber cover.
C Apply grease to the throttle cable ends and rubber covers.



D After connecting the throttle cables, check the operation of the throttle grip and make sure that it returns to its home position easily after being released.



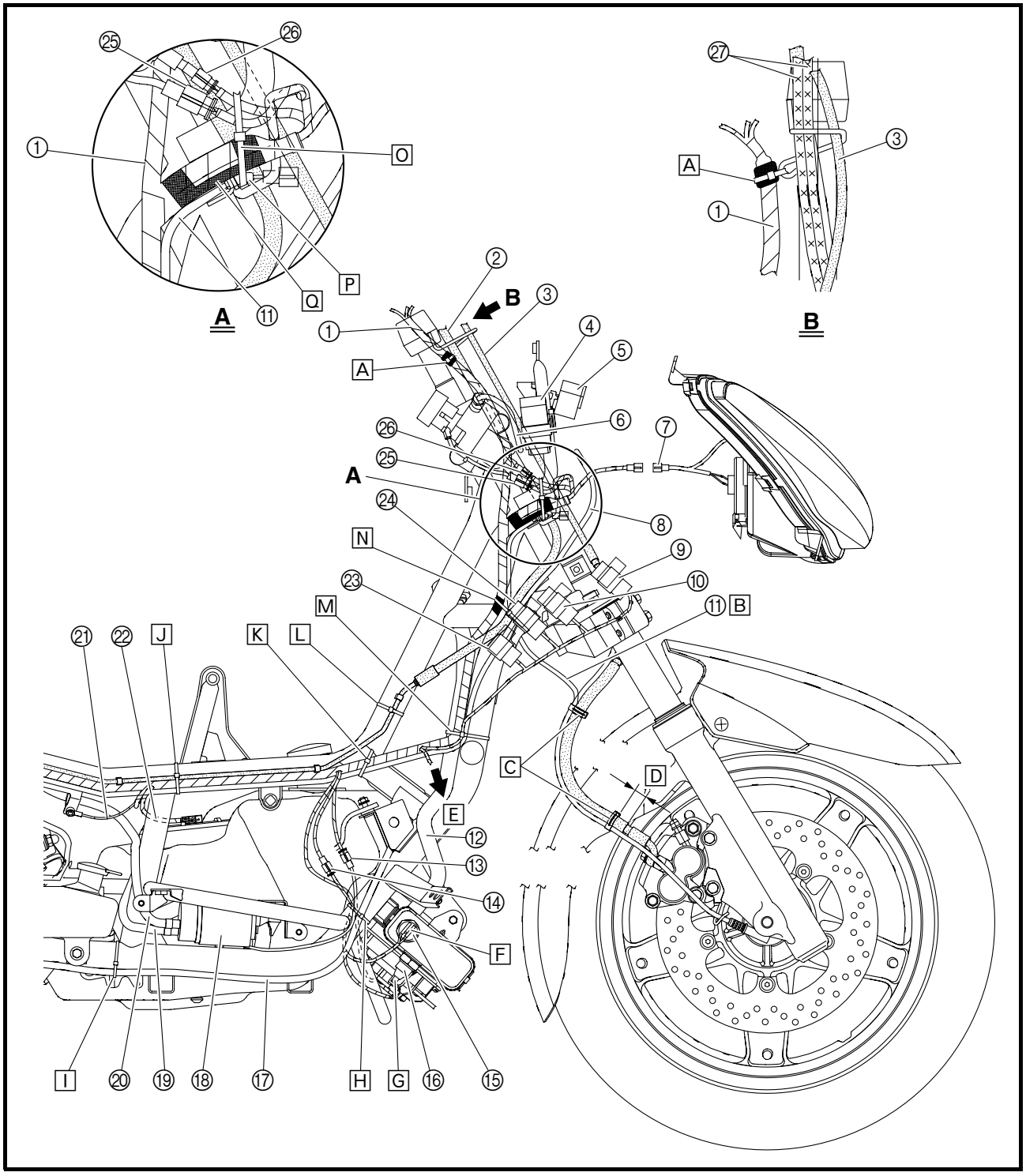
① Wire harness
② Rear brake hose
③ Front brake hose
④ Turn signal relay
⑤ Fuse box
⑥ Seat lock cable
⑦ Headlight assembly coupler
⑧ Starter motor lead
⑨ Headlight relay
⑩ Radiator fan motor relay
⑪ Speed sensor lead
⑫ Radiator filler hose
⑬ Radiator fan motor coupler
⑭ Fuel pump coupler
⑮ Thermo switch (radiator fan motor)
⑯ Thermo switch (auto choke)
⑰ Coolant reservoir hose
⑱ Fuel pump
⑲ Fuel hose (fuel tank to fuel pump)
⑳ Fuel hose (fuel pump to carburetor)
㉑ Ground lead
㉒ Fuel sender lead



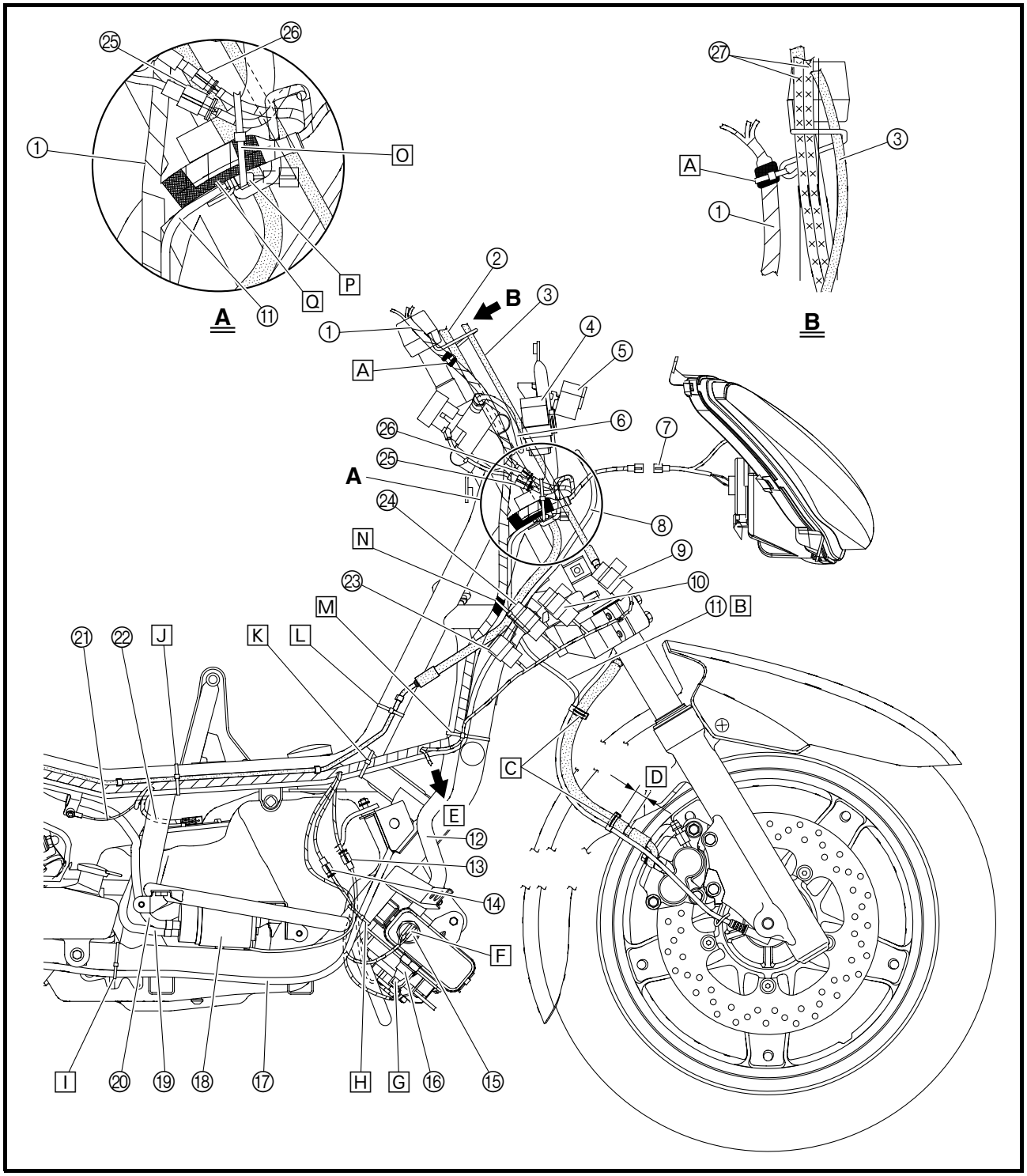
㉓ Starting circuit cut-off relay
㉔ Fuel pump relay
㉕ Main switch coupler
㉖ immobilizer antenna coupler
㉗ Throttle cables

A Fasten the wire harness with a plastic locking tie, making sure to fasten the wire harness at the tape.

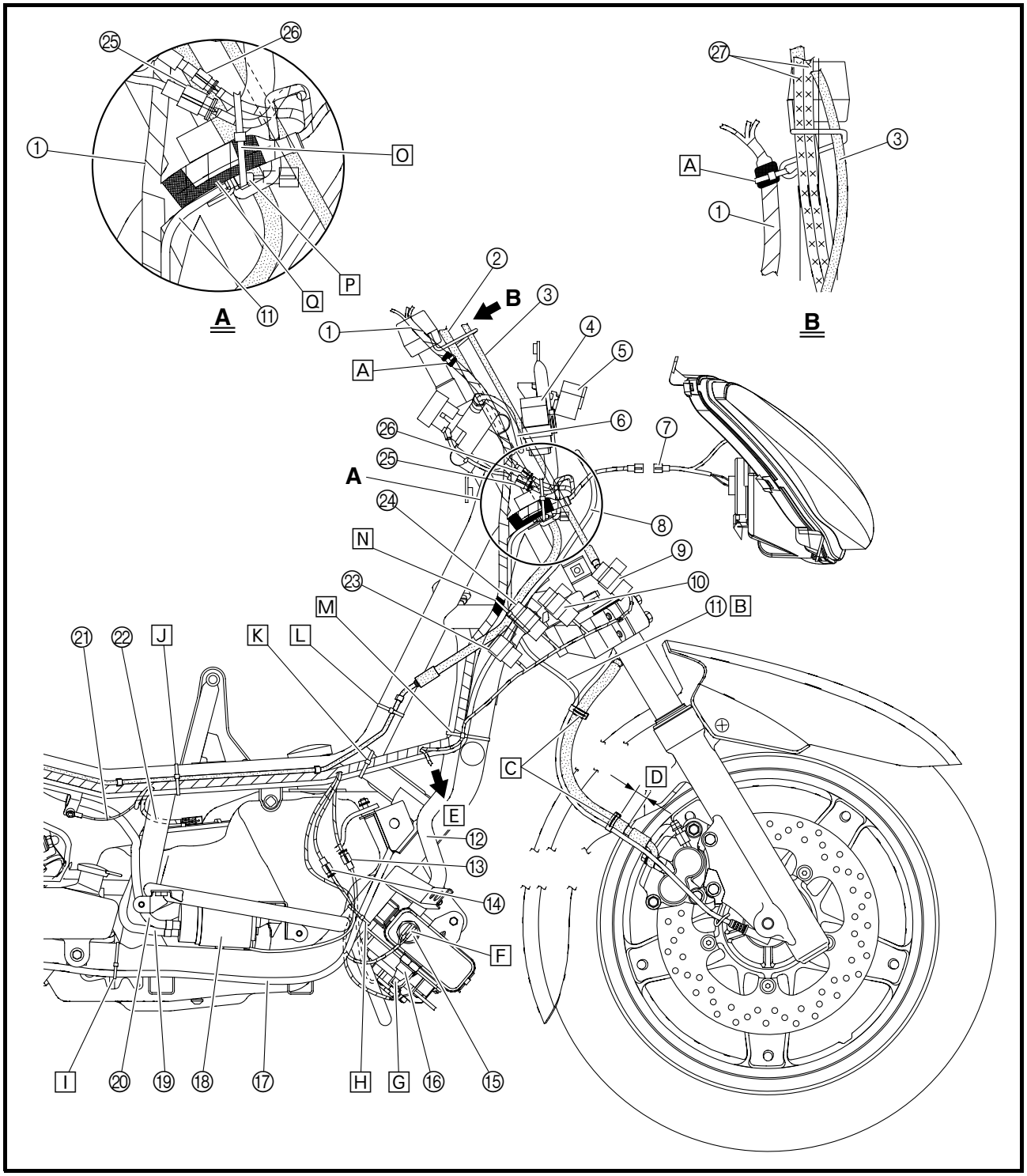
B Be sure to leave a little slack in the speed sensor lead since the front fork moves 10 mm (0.040 in) vertically.
C Fasten the front brake hose and speed sensor lead with a holder, making sure to fasten the front brake hose at the white tape.
D 15 mm (0.60 in)
E To horn, and rectifier/regulator
F Connect each thermo switch connectors (radiator fan motor) to the switch terminals of the same color.



G Connect each thermo switch connectors (auto choke) to the switch terminals of the same color.
H Fasten the coolant reservoir hose, fuel pump lead, radiator fan motor lead and thermo switch leads (radiator fan motor and auto choke unit) to the frame with a plastic locking tie.
I Fasten the coolant reservoir hose to the frame with a plastic locking tie.
J Fasten the wire harness, rear brake pipe, starter motor lead and sidestand switch lead with a plastic locking tie.
K Fasten the wire harness and starter motor lead to the frame with a plastic locking tie.
L Fasten the rear brake pipe with a plastic locking tie.
M Fasten the wire harness, relay leads (headlight relay, radiator fan motor relay, fuel pump relay and starting circuit cut-off relay), starter motor lead and radiator filler hose with a plastic locking tie.

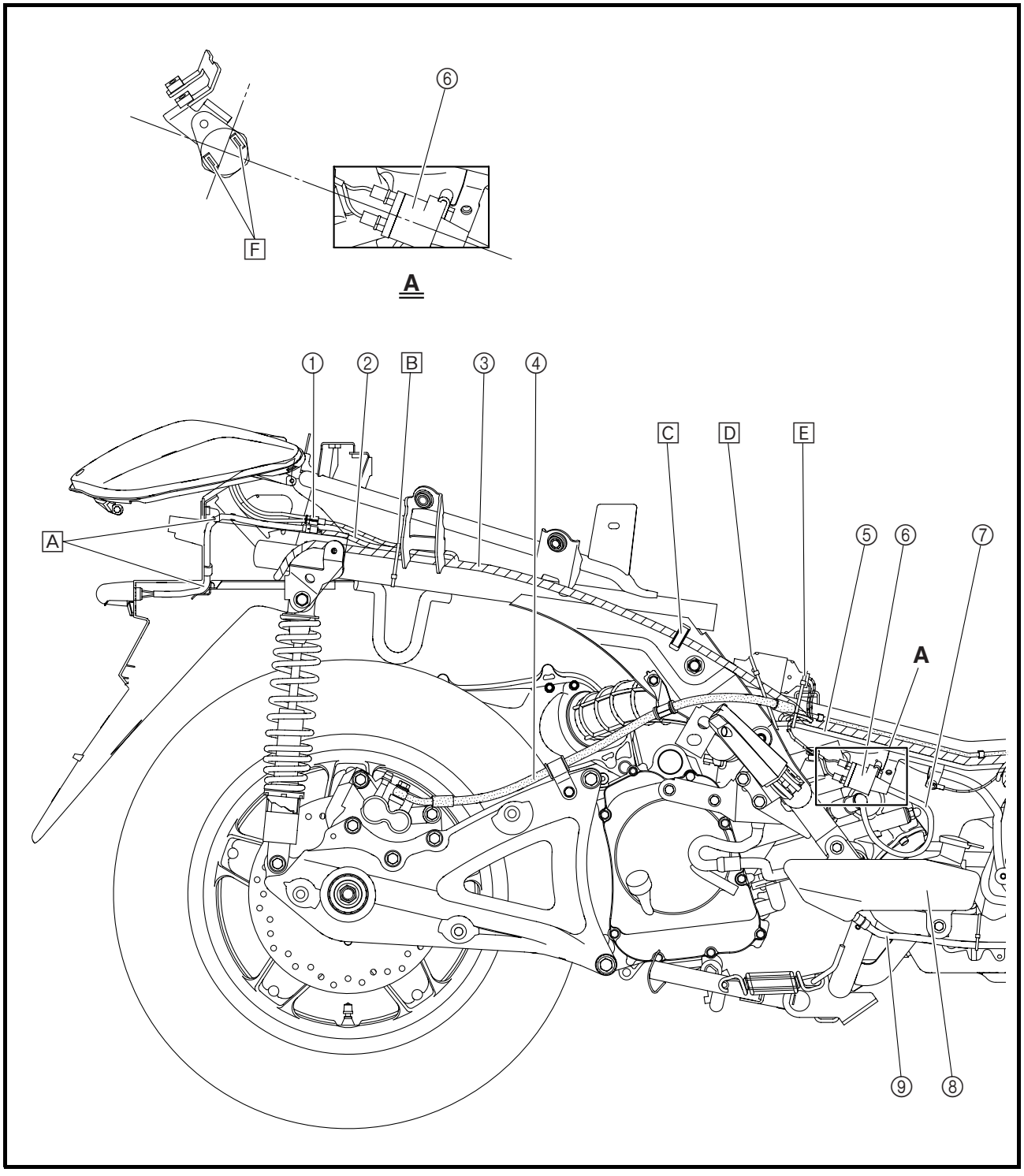


[N] Fasten the wire harness, rear brake pipe, starter motor lead and speed sensor lead to the frame with a plastic locking tie, making sure to fasten the wire harness at the tape.
[O] Fasten the main switch lead, immobilizer antenna lead, speed sensor lead and wire harness to the frame with a plastic locking tie, making sure to position the tie between the blue tape sections of the wire harness and to fasten the tie around the lead protectors, not the leads themselves.
[P] Fasten the speed sensor lead with a plastic locking tie, making sure to install the tie around the protective sleeve of the lead, not the lead itself, and then connect the speed sensor coupler
[Q] Cover the anti-theft alarm LED connector (OPTION) and auxiliary DC jack fuse connector (OPTION) with the protector.

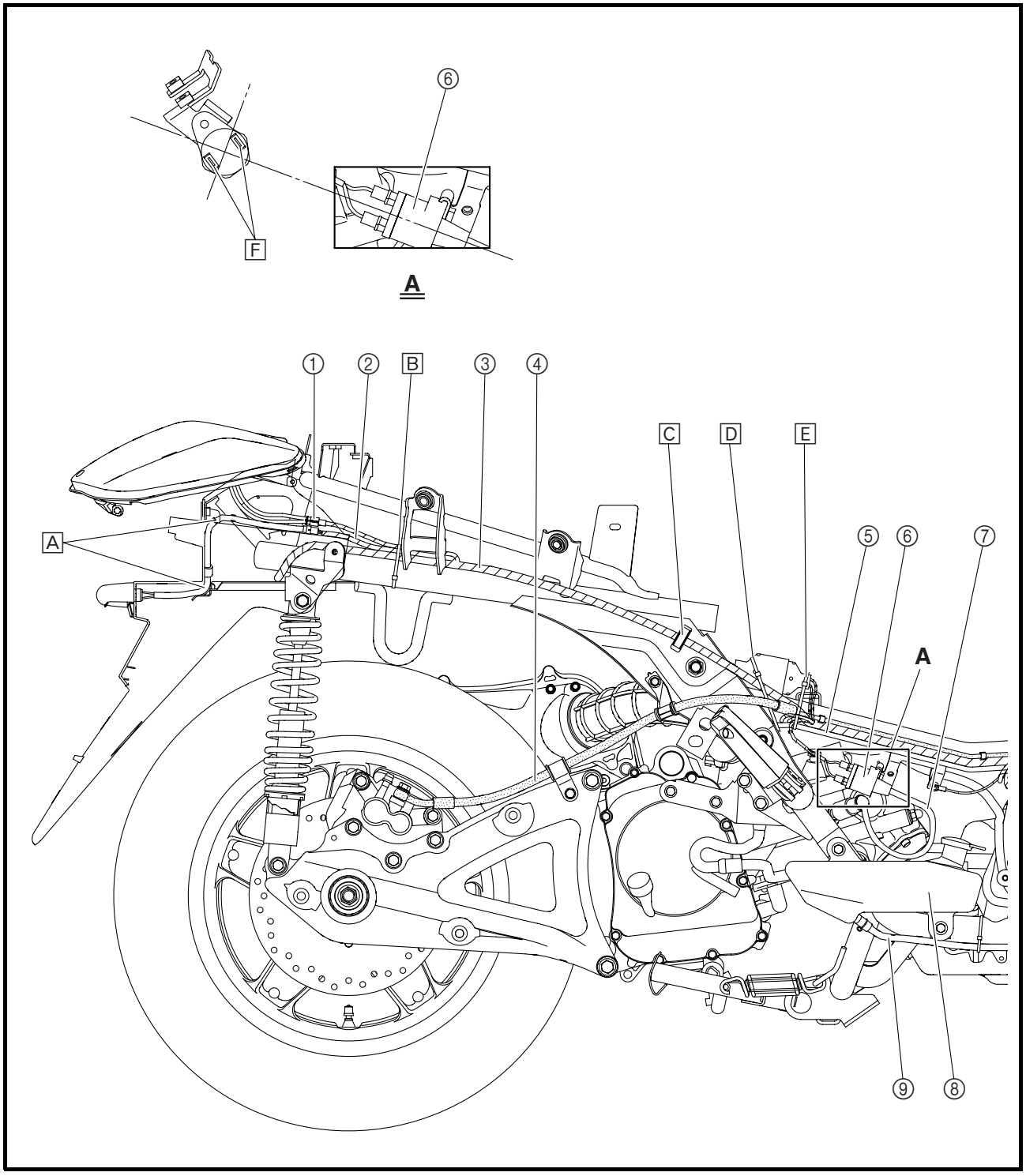


① Tail/brake light assembly coupler (right)
② License plate light
③ Wire harness
④ Rear brake hose
⑤ Starter motor lead
⑥ Ignition coil
⑦ Spark plug lead
⑧ Coolant reservoir
⑨ Coolant reservoir hose

A Route the license plate light lead as shown in the illustration.
B Fasten the wire harness, tail/brake light lead and license plate light lead with a plastic locking tie.
C Fasten the wire harness with the holder
D Fasten the wire harness, starter motor lead, pickup coil/stator assembly lead with to the frame with a plastic locking tie.

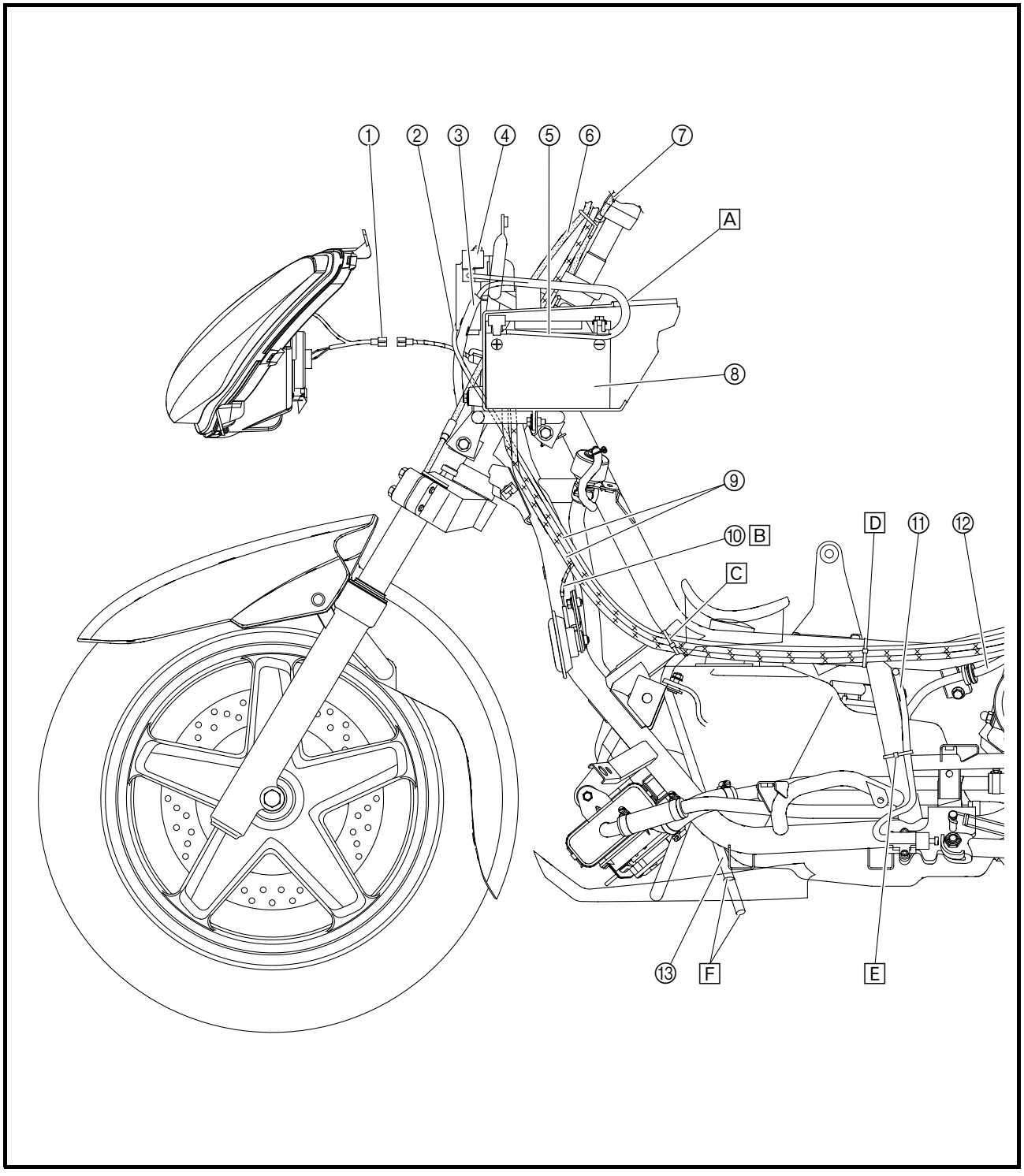


E Fasten the wire harness, starter motor lead, rear brake pipe, pickup coil/stator assembly lead to the frame with a plastic locking tie.
F Connect each ignition coil connectors to the coil terminals of the same color.

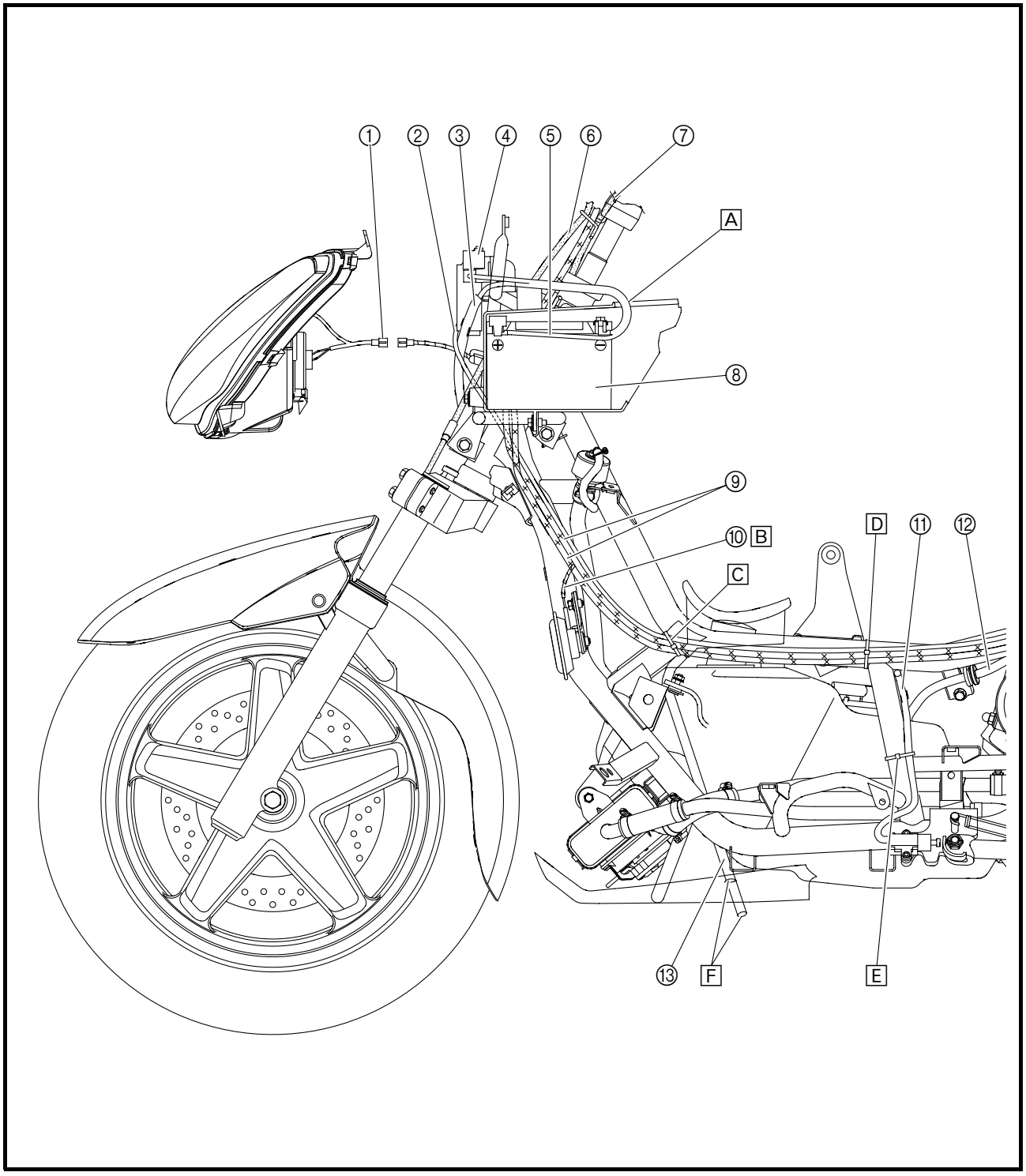


① Headlight assembly coupler
② Seat lock cable
③ Starter motor lead
④ Starter relay
⑤ Positive battery lead
⑥ Front brake hose
⑦ Rear brake hose
⑧ Battery
⑨ Throttle cables
⑩ Horn lead
⑪ Sidestand switch lead
⑫ Fuel hose (fuel pump to carburetor)
⑬ Fuel tank overflow hose

A Pass the battery lead through the opening in the battery box.
B Route the horn lead to the rear of the frame.
C Fasten the seat lock cable and throttle cables to the frame with a plastic locking tie.
D Fasten the seat lock cable, throttle cables and sidestand switch lead to the frame with a plastic locking tie.

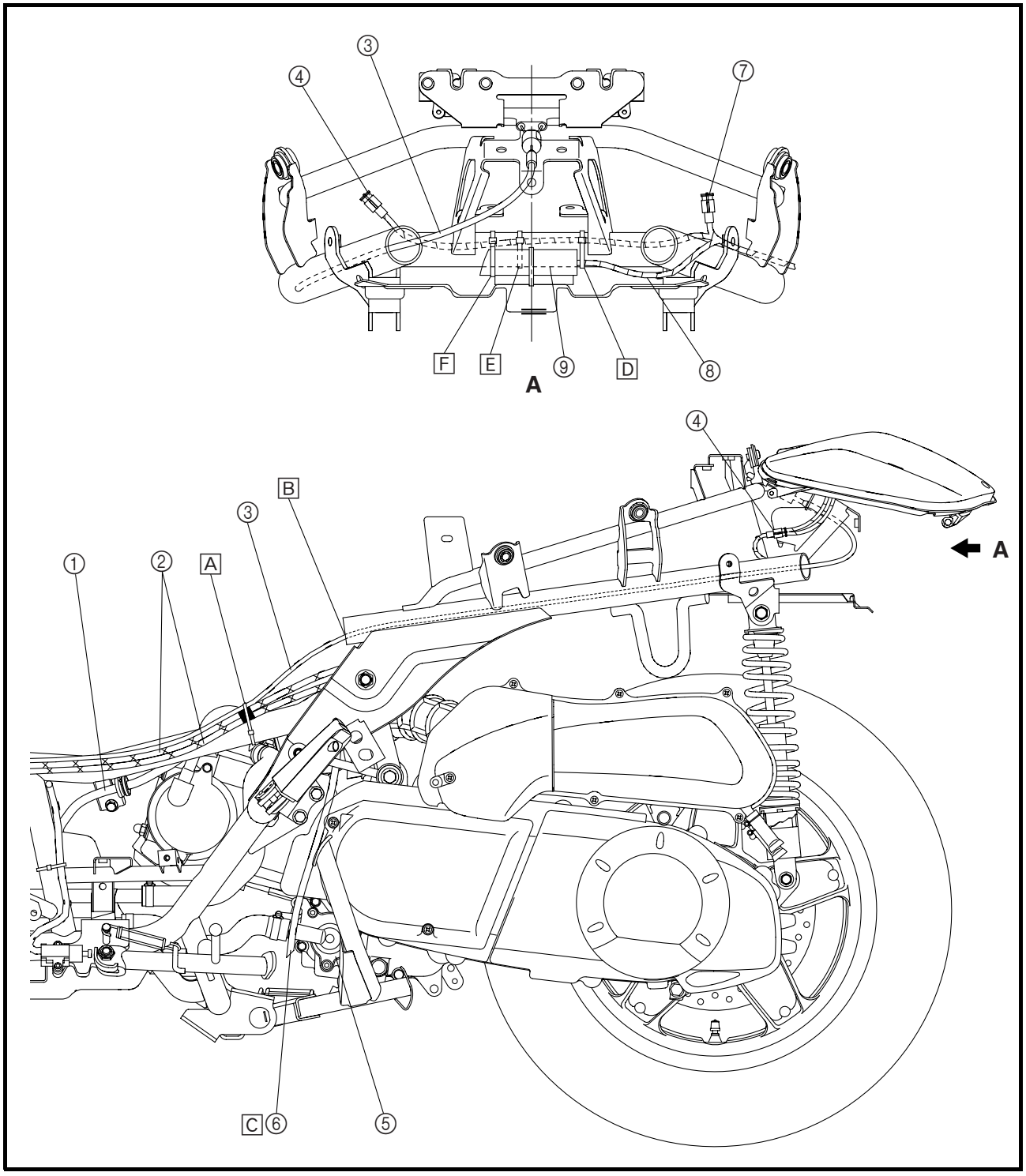


E Fasten the sidestand switch lead to the frame with a plastic locking tie.
F Pass the fuel tank overflow hose through the hole in the under cover.

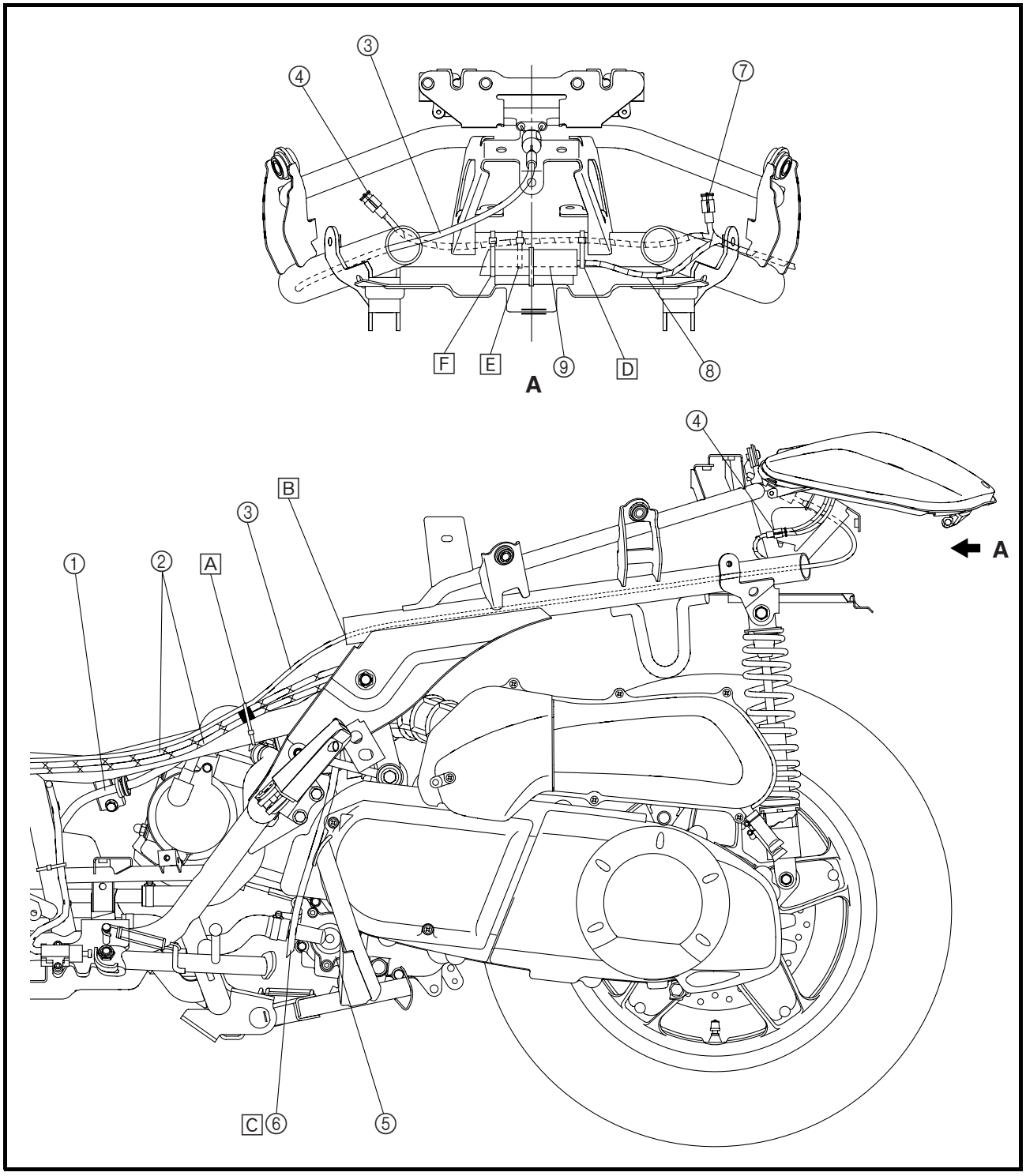


① Fuel hose (fuel pump to carburetor)
② Throttle cables
③ Seat lock cable
④ Tail/brake light assembly coupler (left)
⑤ Water pump
⑥ Carburetor overflow hose
⑦ Tail/brake light assembly coupler (right)
⑧ Anti-theft alarm lead (OPTION)
⑨ Anti-theft alarm (OPTION)

A Fasten the seat lock cable and throttle cables with a plastic locking tie, making sure to fasten the throttle cables at the mark
B Pass the seat lock cable through the frame tube.
C Route the carburetor overflow hose to the outside of the water pump.
D Fasten the anti-theft alarm lead (OPTION) and tail/brake light assembly lead (left) to the frame with a plastic locking tie.

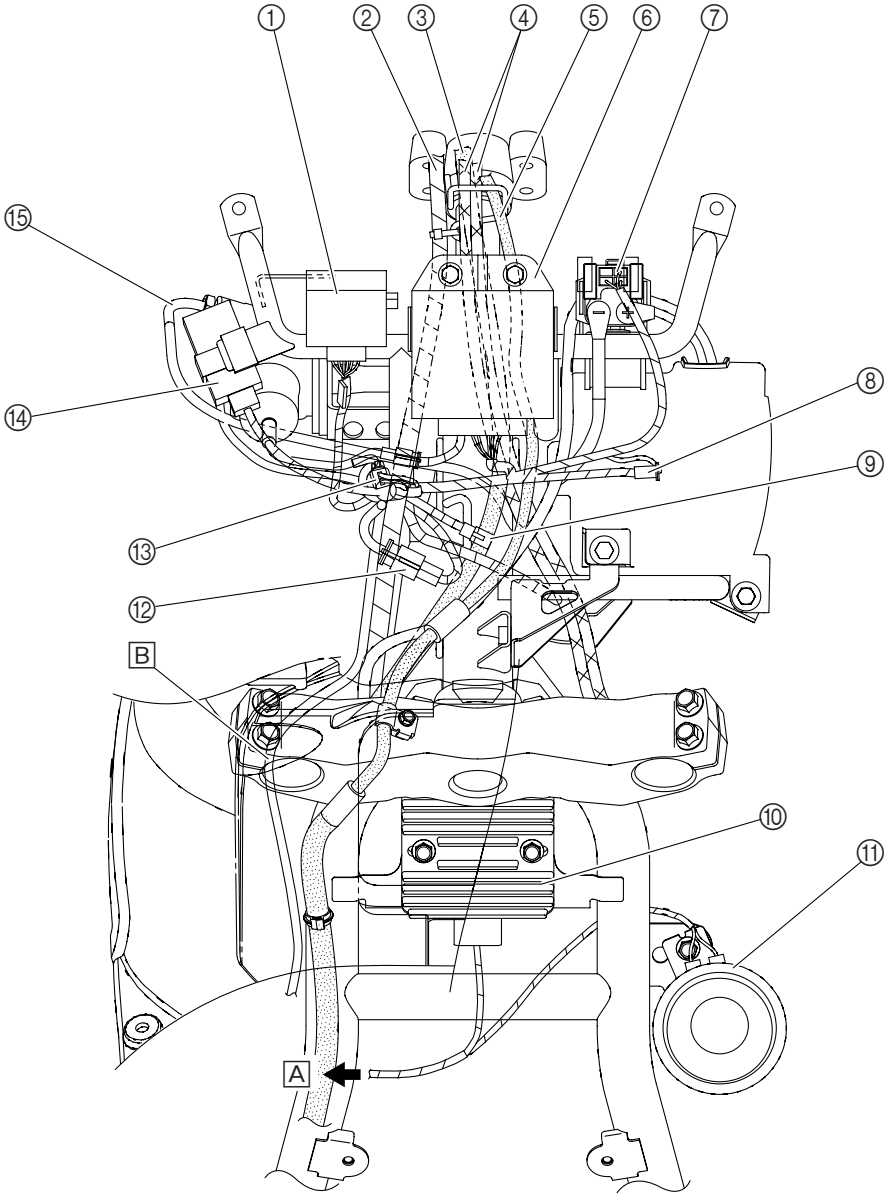


E Fasten the tail/brake light assembly lead (left) to the frame with a plastic locking tie.
F Fasten the anti-theft coupler (OPTION) to the frame with a plastic locking tie.



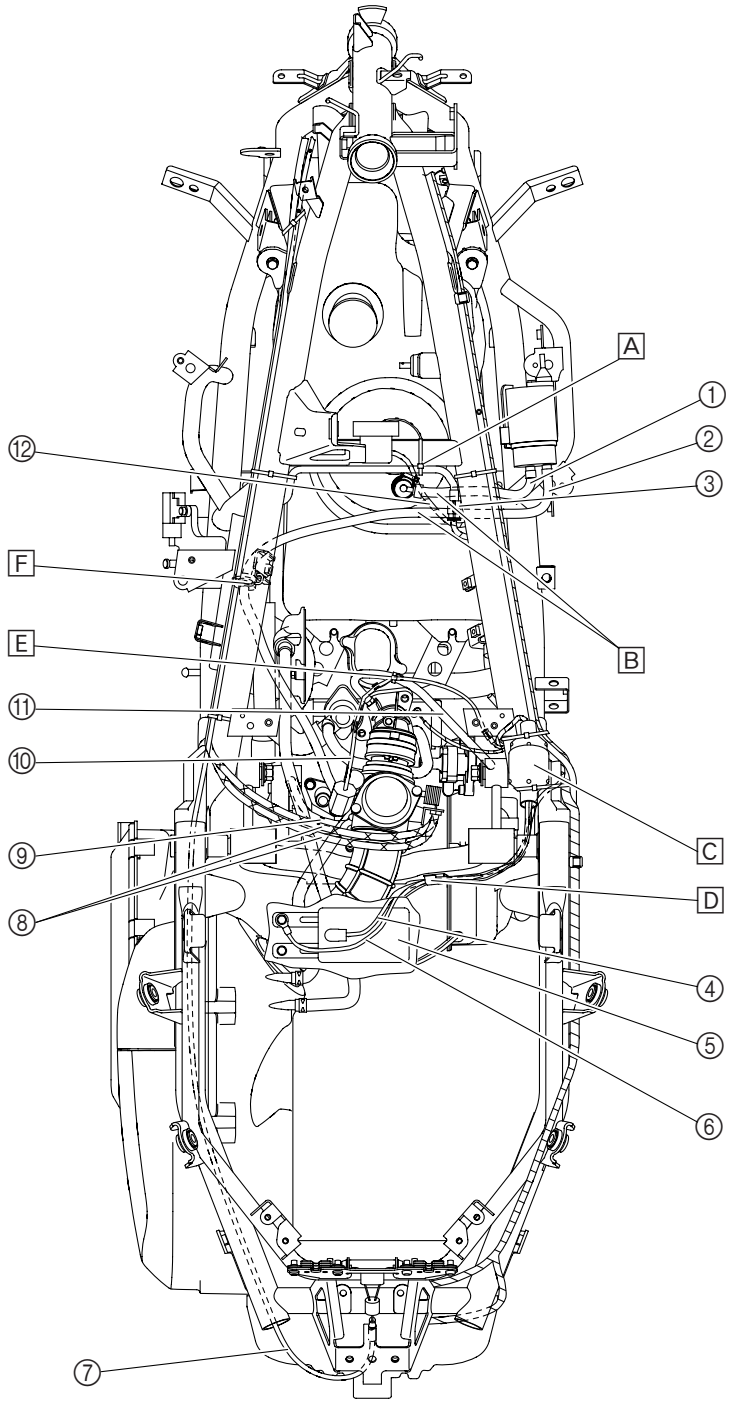
① Fuse box
② Wire harness
③ Rear brake hose
④ Throttle cables
⑤ Front brake hose
⑥ CDI unit
⑦ Starter relay
⑧ Ground coupler
⑨ Headlight assembly coupler
⑩ Rectifier/regulator
⑪ Horn
⑫ Speed sensor coupler
⑬ Main switch coupler
⑭ Turn signal relay
⑮ Seat lock cable

A To wire harness
B Pass the speed sensor lead through the hole in the inner fender.

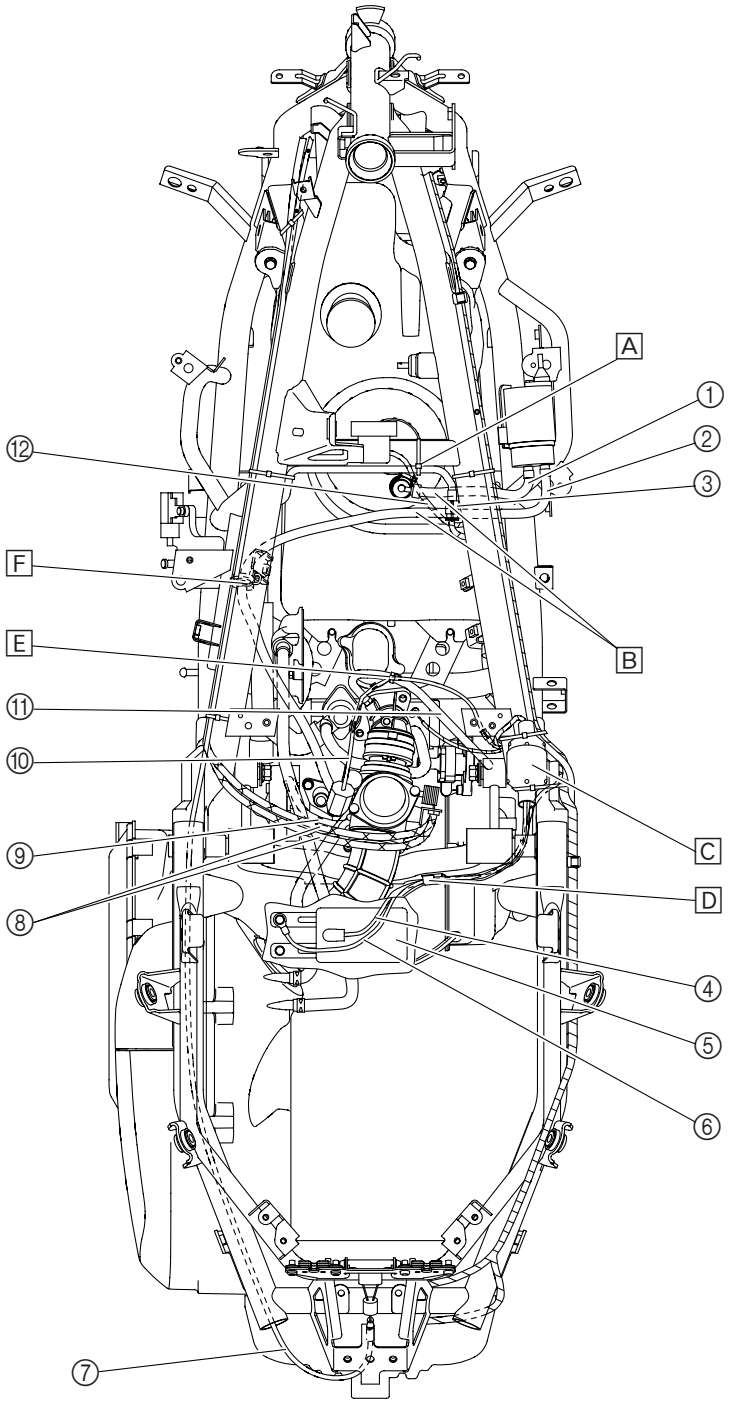


① Fuel hose (fuel tank to fuel pump)
② Fuel hose (fuel pump to carburetor)
③ Sidestand switch coupler
④ Starter motor lead
⑤ Starter motor
⑥ Ground lead
⑦ Seat lock cable
⑧ Throttle cables
⑨ Carburetor overflow hose
⑩ Auto choke unit lead
⑪ Air induction system vacuum hose
⑫ Fuel sender lead

A Fasten the sidestand switch lead to the frame cross member with a plastic locking tie.
B Route the fuel hose (fuel tank to fuel pump) and fuel hose (fuel pump to carburetor) over the fuel sender lead.
C After connecting the pickup coil/stator assembly coupler, slide the boot over the couplers as shown the illustration



[D] Fasten the starter motor lead and ground lead with the holder, making sure to align the white tape on the starter motor lead with the holder.
[E] Pass the auto choke unit lead and air induction system vacuum hose with a plastic locking tie.
[F] Fasten the grommet on the fuel hose (fuel pump to carburetor) with the holder.



CHAPTER 3
PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION 3-1

PERIODIC MAINTENANCE AND LUBRICATION CHART 3-1

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HANDLEBAR COVERS 3-5
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EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAU17705

PERIODIC MAINTENANCE AND LUBRICATION CHART

NOTE:

- **The annual checks must be performed every year, except if a kilometer-based maintenance is performed instead.**
- From 50000 km, repeat the maintenance intervals starting from 10000 km.
- Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

No		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1000 Km)					ANNUAL CHECK
				1	10	20	30	40	
1	*	Fuel line	• Check fuel and vacuum hoses for cracks or damage.		√	√	√	√	√
2		Spark plug	• Check condition. • Clean and regap.		√		√		
			• Replace.			√		√	
3	*	Valves	• Check valve clearance. • Adjust.			√		√	
4		Air filter element	• Replace.			√		√	
5	*	V-belt case air filter elements	• Clean.		√		√		
			• Replace.			√		√	
6	*	Front brake	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
7	*	Rear brake	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
8	*	Brake hose	• Check for cracks or damage.		√	√	√	√	√
			• Replace.	Every 4 years					
9	*	Wheels	• Check runout and for damage.		√	√	√	√	
10	*	Tires	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
11	*	Wheel bearings	• Check bearing for looseness or damage.		√	√	√	√	
12	*	Steering bearings	• Check bearing play and steering for roughness.	√	√	√	√	√	
			• Lubricate with lithium-soap-based grease.	Every 20000 km					
13	*	Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√	√
14		Sidestand, centerstand	• Check operation. • Lubricate.		√	√	√	√	√

PERIODIC MAINTENANCE AND LUBRICATION CHART

CHK ADJ

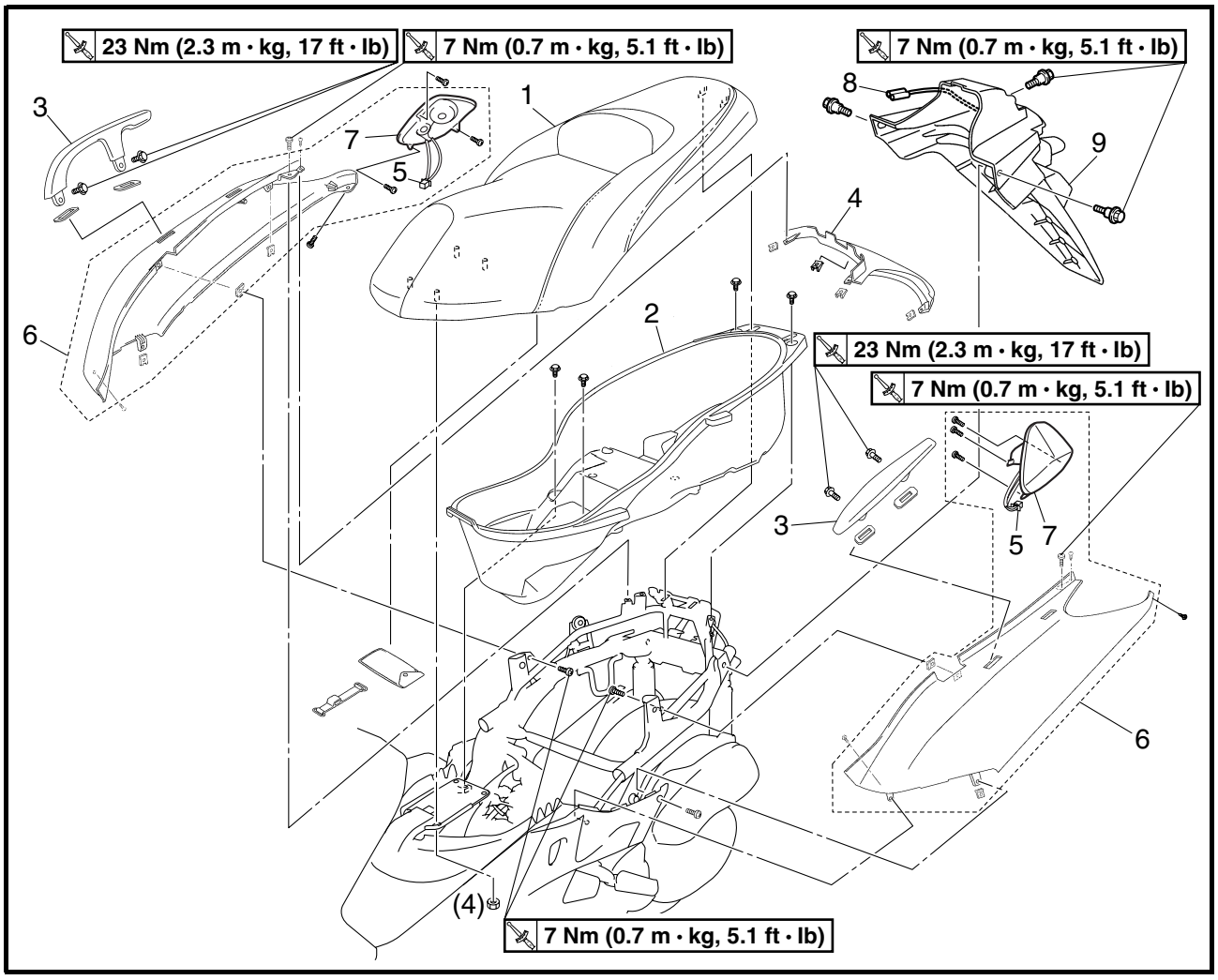
No		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1000 Km)					ANNUAL CHECK
				1	10	20	30	40	
15	*	**Sidestand switch**	• Check operation.	√	√	√	√	√	√
16	*	**Front fork**	• Check operation and for oil leakage.		√	√	√	√	
17	*	**Shock absorber assemblies**	• Check operation and shock absorbers for oil leakage.		√	√	√	√	
18	*	**Carburetor**	• Adjust engine idling speed.	√	√	√	√	√	√
19		**Engine oil**	• Change.	√	**When the oil change indicator light comes on (every 3000 km)**				
			• Check oil level and vehicle for oil leakage.	**Every 3000 km**					√
20	*	**Engine oil strainer**	• Clean.	√					
21	*	**Cooling system**	• Check coolant level and vehicle for coolant leakage.		√	√	√	√	√
			• Change.	**Every 3 years**					
22		**Final transmission oil**	• Check vehicle for oil leakage.	√	√		√		
			• Change.	√		√		√	
23	*	**V-belt**	• Replace.	**Every 20000 km**					
24	*	**Front and rear brake switches**	• Check operation.	√	√	√	√	√	√
25		**Moving parts and cables**	• Lubricate.		√	√	√	√	√
26	*	**Throttle grip housing and cable**	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√
27	*	**Muffler and exhaust pipe**	• Check the screw clamp for looseness.	√	√	√	√	√	
28	*	**Lights, signals and switches**	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

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NOTE:

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake service
  - Regularly check and, if necessary, correct the brake fluid level.
  - Every two years replace the internal components of the brake master cylinder and caliper, and change the brake fluid.
  - Replace the brake hoses every four years and if cracked or damaged.

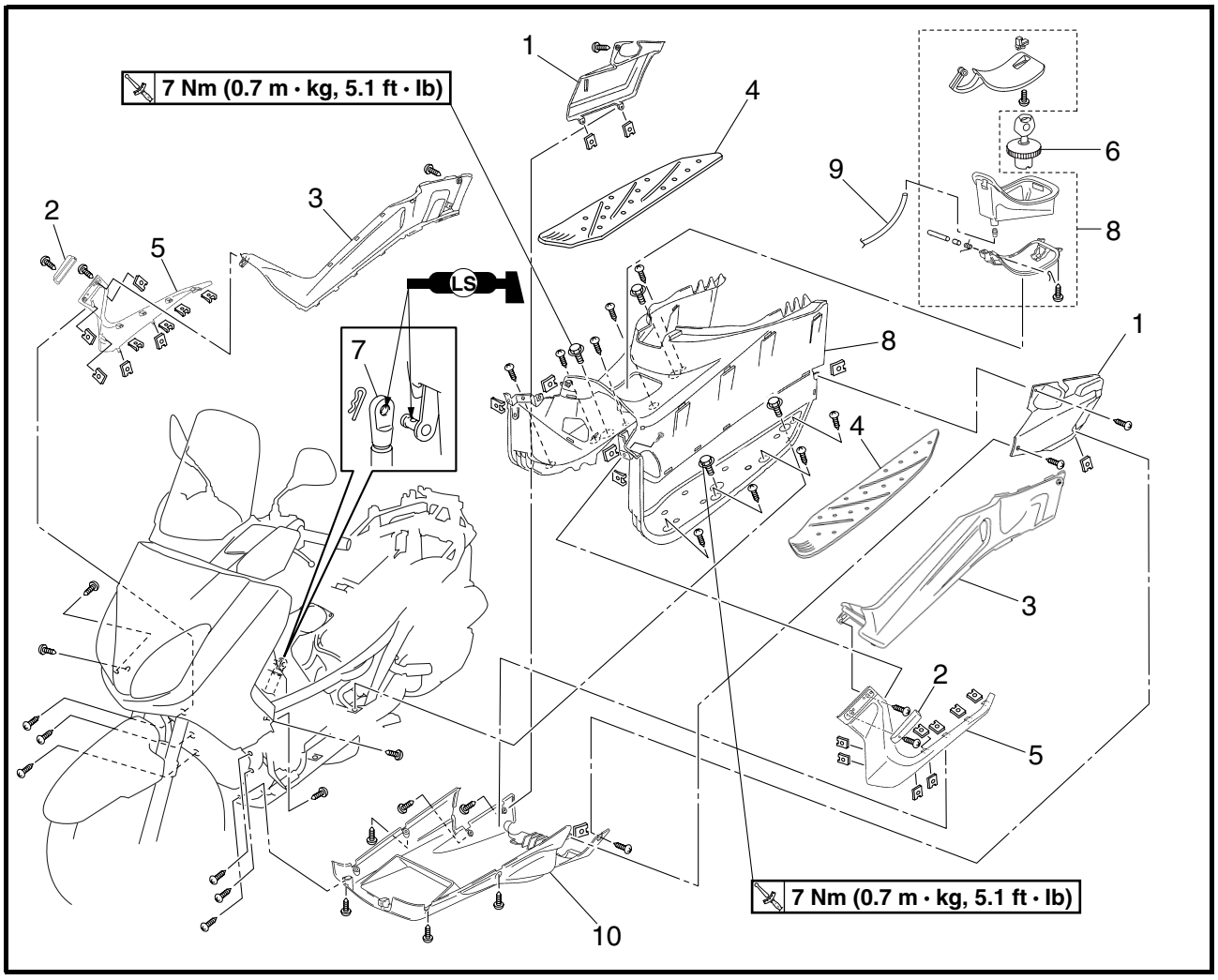
EAS00038
COVERS AND PANELS
SEAT AND SIDE COVERS



Order	Job/Part	Q'ty	Remarks
	Removing the seat and side covers		Remove the parts in the order listed.
1	Seat	1	
2	Storage box	1	
3	Grab bar	2	
4	Rear cover	1	
5	Tail/brake light assembly coupler (left and right)	2	Disconnect.
6	Rear side cover (left and right)	2	
7	Tail/brake light assembly (left and right)	2	
8	License plate light coupler	1	Disconnect.
9	Mudguard	1	
			For installation, reverse the removal procedure.

EAS00040

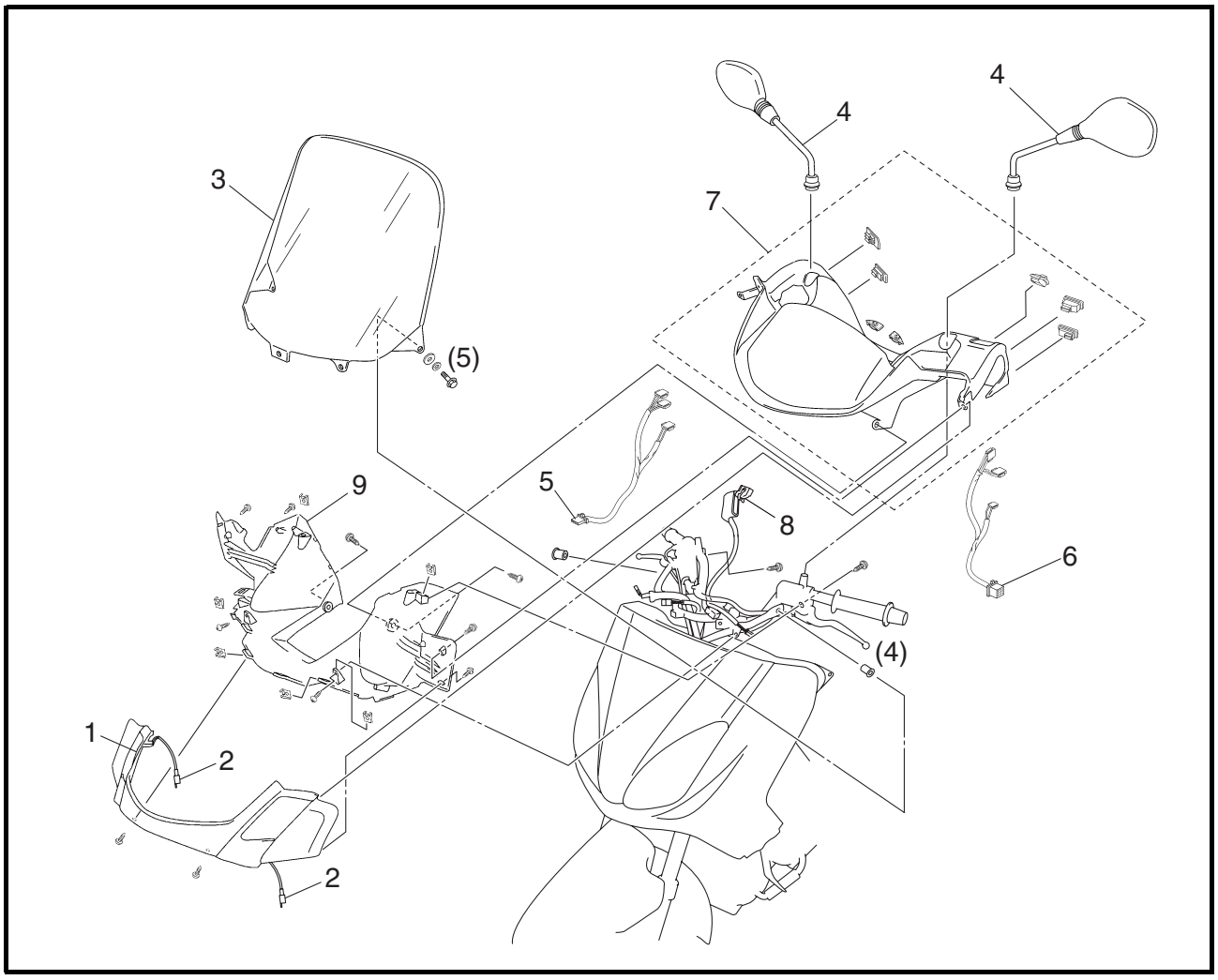
FOOTREST BOARD



Order	Job/Part	Q'ty	Remarks
	Removing the footrest board		Remove the parts in the order listed.
1	Center panel 1 (left and right)	2	
2	Protector (left and right)	2	
3	Center panel 2 (left and right)	2	
4	Footrest board mat (left and right)	2	
5	Front panel (left and right)	2	
6	Fuel tank cap	1	
7	Seat damper	1	
8	Footrest board	1	
9	Fuel tank overflow hose	1	
10	Under cover	1	
			For installation, reverse the removal procedure.

EAS00042

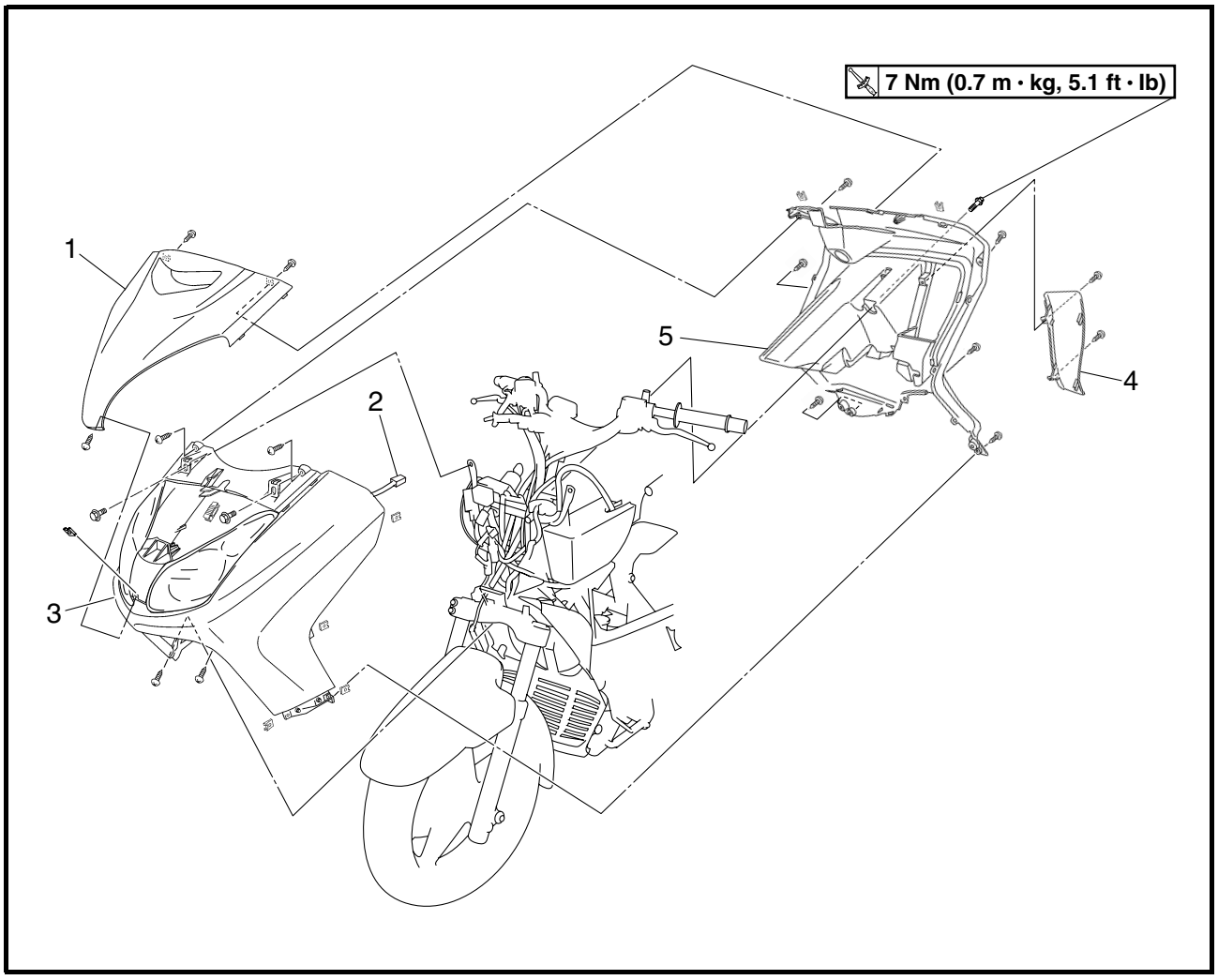
HANDLEBAR COVERS



Order	Job/Part	Q'ty	Remarks
	Removing the handlebar covers		Remove the parts in the order listed.
1	Front turn signal light assembly	1	
2	Front turn signal light coupler	2	Disconnect.
3	Windshield	1	
4	Rearview mirror (left and right)	2	
5	Handlebar upper cover right switch coupler	1	Disconnect.
6	Handlebar upper cover left switch coupler	1	Disconnect.
7	Handlebar upper cover (with meter assembly)	1	
8	Meter assembly coupler	1	Disconnect.
9	Handlebar lower cover	1	
			For installation, reverse the removal procedure.

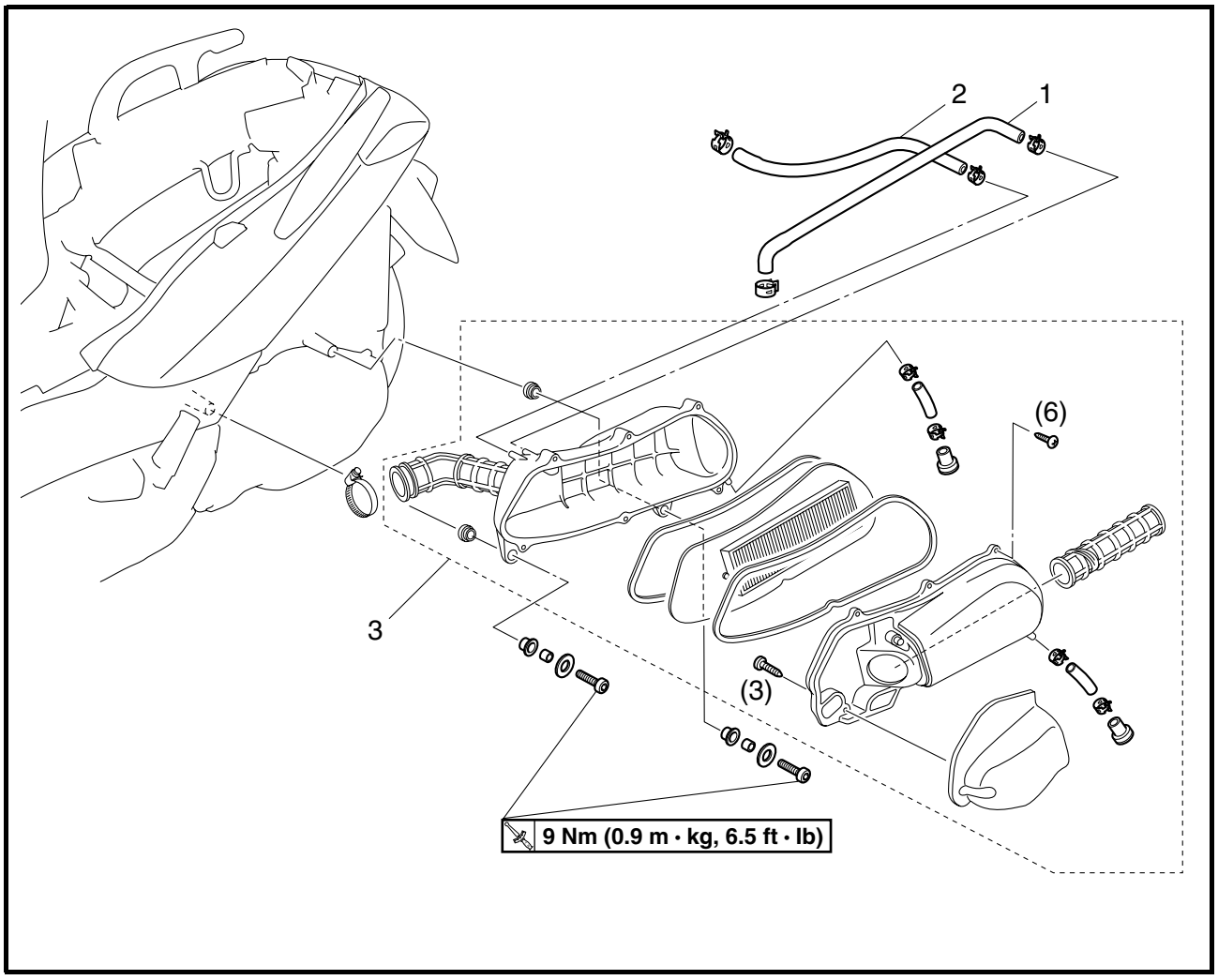
EAS00043

STORAGE COMPARTMENT



Order	Job/Part	Q'ty	Remarks
	Removing the storage compartment		Remove the parts in the order listed.
1	Upper panel	1	
2	Headlight assembly coupler	1	Disconnect.
3	Front cowling	1	
4	Battery cover	1	
5	Storage compartment	1	
			For installation, reverse the removal procedure.

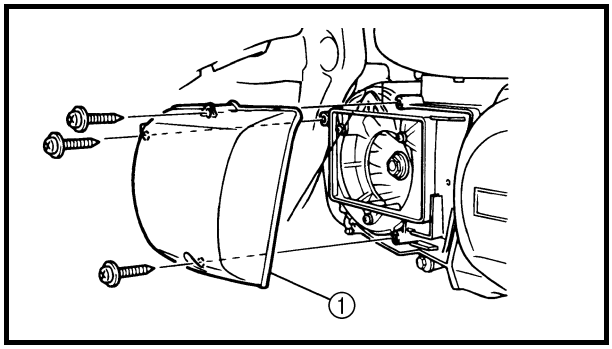
AIR FILTER CASE



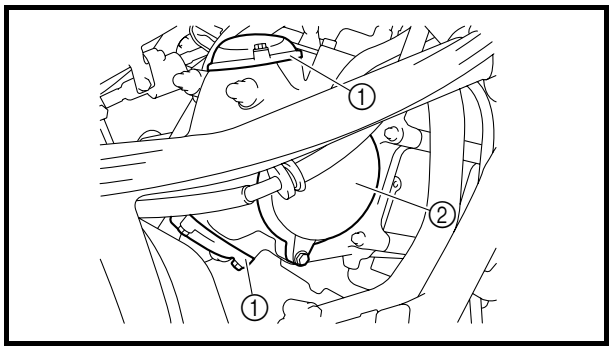
Order	Job/Part	Q'ty	Remarks
	Removing the air filter case assembly		Remove the parts in the order listed.
	Storage box		Refer to "COVERS AND PANELS".
1	Cylinder head breather hose	1	
2	Air induction system hose (air filter case to air cut-off valve assembly)	1	
3	Air filter case assembly	1	For installation, reverse the removal procedure.

EAS00049
ENGINE
ADJUSTING THE VALVE CLEARANCE
The following procedure applies to all of the valves.

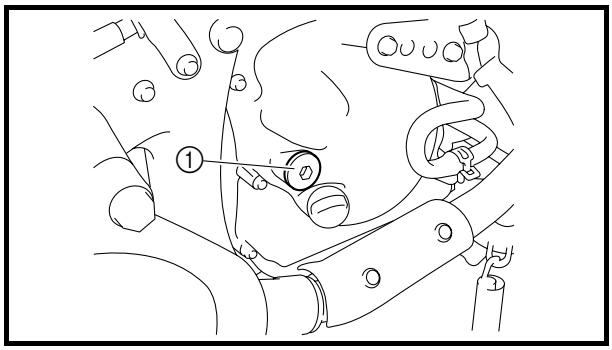
NOTE:
- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.



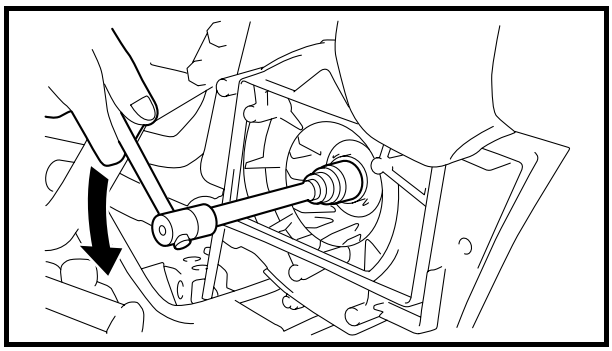
1. Remove:
   - storage box
   - footrest board
   Refer to “COVERS AND PANELS”.
2. Remove:
   - V-belt case air filter cover ①

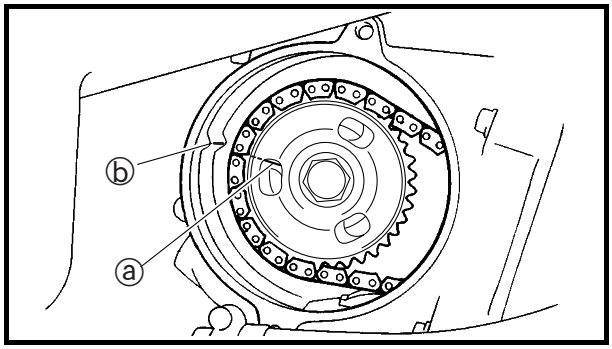


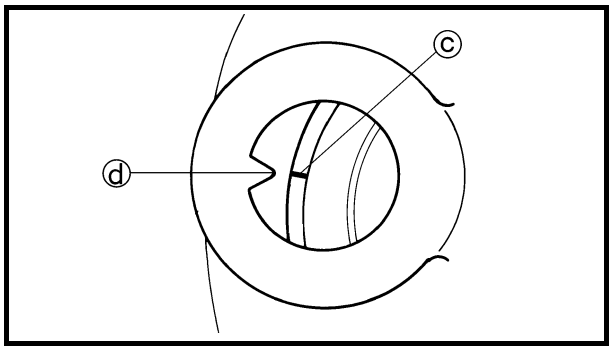
3. Remove:
   - spark plug
   - tappet covers (intake and exhaust) ①
   - camshaft sprocket cover ②

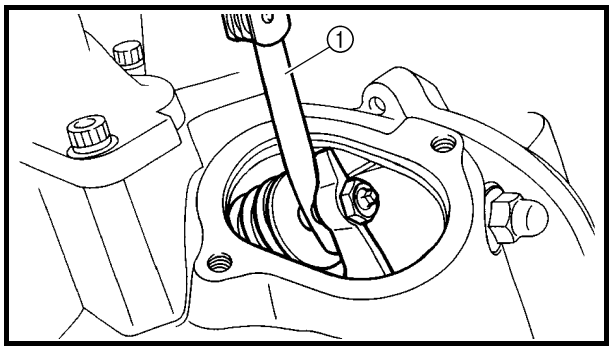


4. Remove:
   - timing mark accessing plug ①









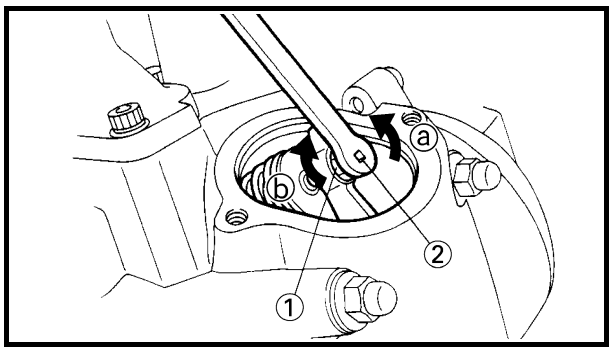
5. Measure:
   • valve clearance
   Out of specification → Adjust.

Valve clearance (cold)
Intake valve
0.08 ~ 0.12 mm
(0.0031 ~ 0.0047 in)
Exhaust valve
0.16 ~ 0.20 mm
(0.0063 ~ 0.0079 in)

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a. Turn the primary sheave nut on the left side of the crankshaft counterclockwise to turn the crankshaft.
b. When the piston is at TDC on the compression stroke, align the "I" mark ⓐ on the camshaft sprocket with the stationary pointer ⓑ on the cylinder head.
c. Align the "I" mark ⓒ on the generator rotor with the stationary pointer ⓓ on the generator cover.
d. Measure the valve clearance with a thickness gauge ①.
   Out of specification → Adjust.

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6. Adjust:
   • valve clearance

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a. Loosen the locknut ①.
b. Insert a thickness gauge between the end of the adjusting screw and the valve tip.
c. Turn the adjusting screw ② in direction ⓐ or ⓑ until the specified valve clearance is obtained.

Direction ⓐ	**Valve clearance is increased.**
Direction ⓑ	**Valve clearance is decreased.**



Tappet adjusting tool
90890-01311

d. Hold the adjusting screw to prevent it from moving and tighten the locknut to the specified torque.

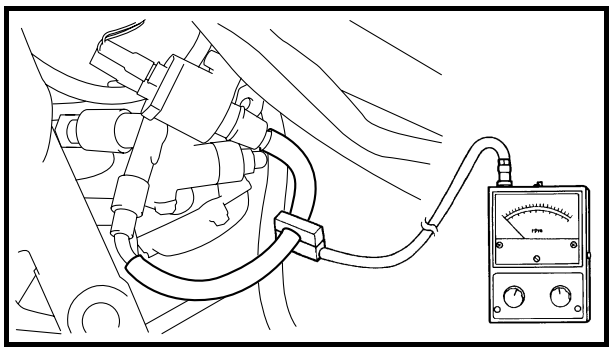


Locknut
14 Nm (1.4 m · kg, 1.0 ft · lb)

e. Measure the valve clearance again.
f. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

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7. Install:
   • timing mark accessing plug
   8 Nm (0.8 m · kg, 5.8 ft · lb)
8. Install:
   • camshaft sprocket cover
   10 Nm (1.0 m · kg, 7.2 ft · lb)
   • O-rings New
   • tappet covers (intake and exhaust)
   10 Nm (1.0 m · kg, 7.2 ft · lb)
   • spark plug **18 Nm (1.8 m · kg, 13 ft · lb)**
9. Install:
   • V-belt case air filter cover
10. Install:
   • footrest board
   • storage box
   Refer to “COVERS AND PANELS”.

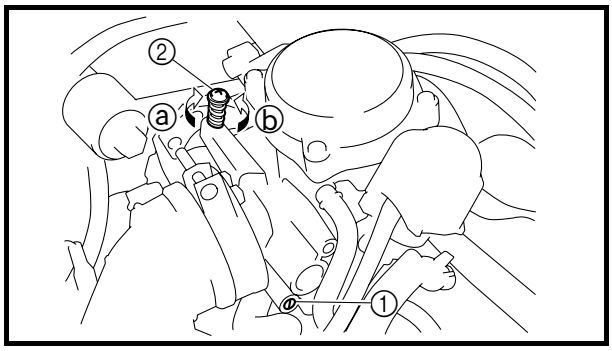


EAS00054
ADJUSTING THE ENGINE IDLING SPEED

NOTE:
Prior to adjusting the engine idling speed, the air filter element should be cleaned, and the engine should have adequate compression.

1. Remove:
   • storage box
   Refer to “COVERS AND PANELS”.
2. Start the engine and warm it up for several minutes.
3. Connect:
   • engine tachometer
   (to the spark plug lead)
4. Check:
   • engine idling speed
   Out of specification → Adjust.

	Engine idling speed **1,550 ~ 1,650 r/min**



5. Adjust:
   • engine idling speed

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a. Turn the pilot screw ① in or out until it is lightly seated.
b. Turn the pilot screw out the specified number of turns.

	Pilot screw **2 turns out**

c. Turn the throttle stop screw ② in direction ⓐ or ⓑ until the specified engine idling speed is obtained.

Direction ⓐ	**Engine idling speed is increased.**
Direction ⓑ	**Engine idling speed is decreased.**

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6. Adjust:
   • throttle cable free play
   Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY".

Throttle cable free play
(at the flange of the throttle grip)
4.0 ~ 6.0 mm (0.16 ~ 0.24 in)

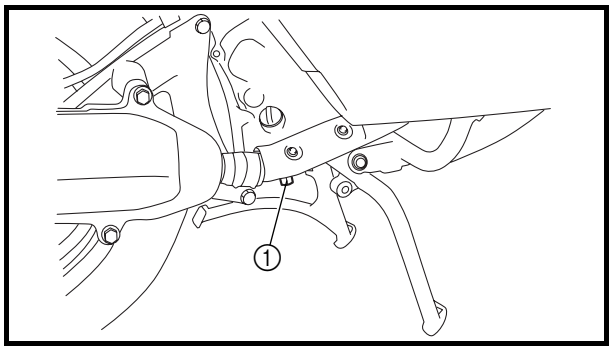
CHECKING THE EXHAUST GAS AT IDLE

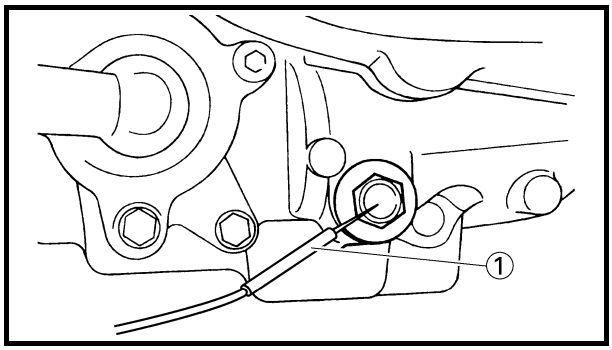
Check the exhaust gas at idle when the air induction system is operating.

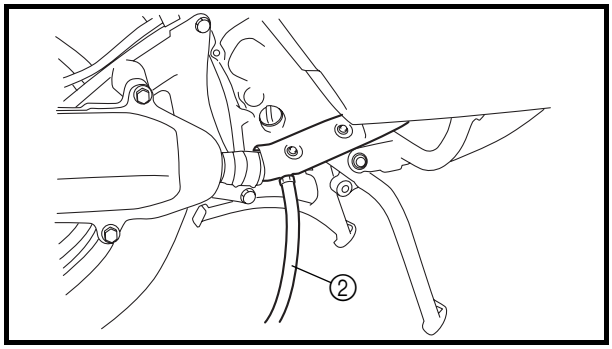
1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on a suitable stand.
- Make sure that the vehicle is upright.

2. Remove:
   • storage box
   Refer to "COVERS AND PANELS".
3. Remove:
   • exhaust pipe bolt ①







4. Connect:
   • temperature probe tester ①
   (to the engine oil drain bolt)
   • engine tachometer
   (to the spark plug lead)
   • exhaust attachment ②
   (to the exhaust pipe)

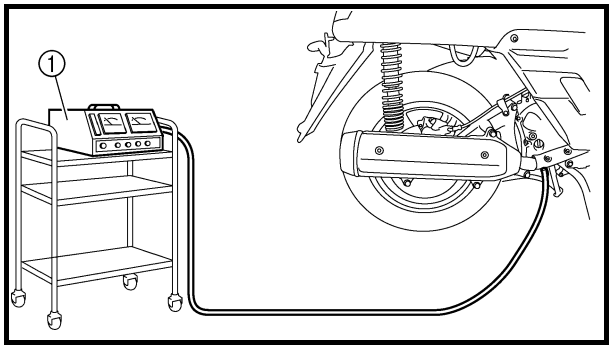
Exhaust attachment
90890-03134

5. Start the engine and warm it up until the specified oil temperature is reached.

Oil temperature
65 ~ 75 °C (149 ~ 167 °F)

6. Measure:
   • engine idling speed
   Out of specification → Adjust.
   Refer to "ADJUSTING THE ENGINE IDLING SPEED".

Engine idling speed
1,550 ~ 1,650 r/min



7. Connect:
   • CO tester ①
   (to the exhaust attachment)
8. Measure:
   • CO density
   Out of specification → Check air induction system.
   Refer to "AIR INDUCTION SYSTEM" in chapter 7.

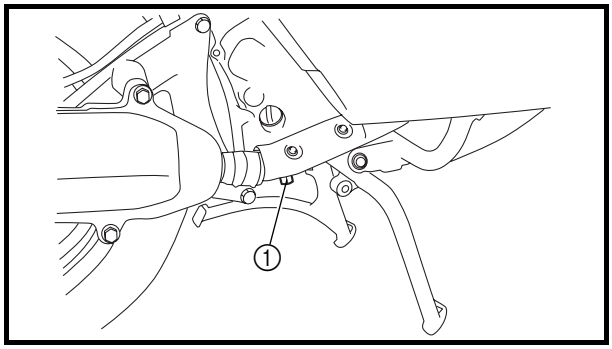
CO density (when air induction system is operating)
4.0%
(Reference value)

CHECKING AND ADJUSTING THE EXHAUST GAS AT IDLE

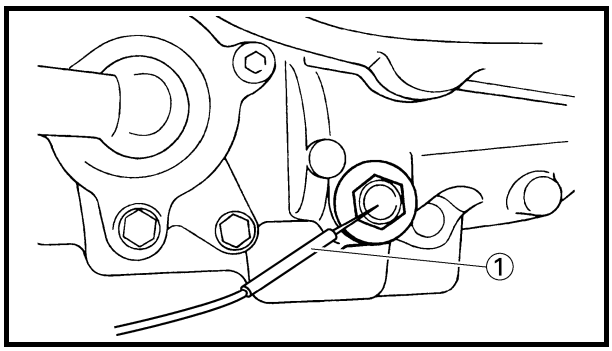
Check the exhaust gas at idle when the air induction system is not operating.

1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on a suitable stand.
- Make sure that the vehicle is upright.
- The air filter element should be cleaned, and the engine should have adequate compression.

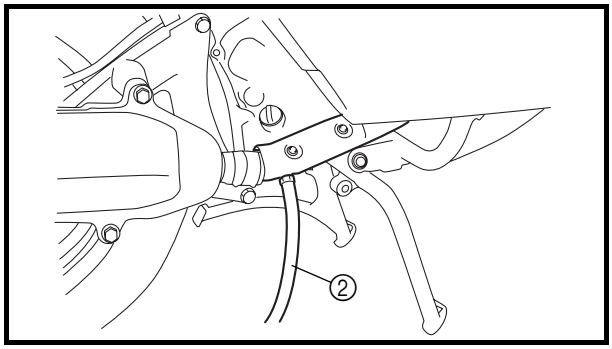


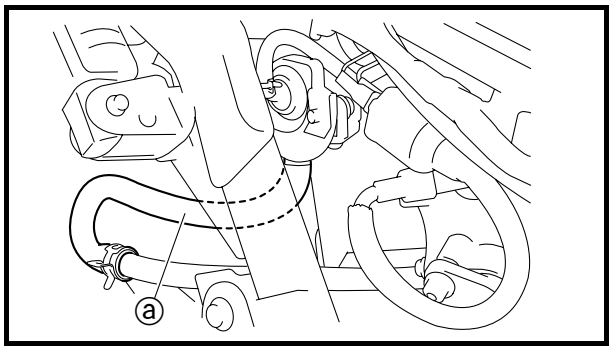
2. Remove:
   • footrest board
   Refer to "COVERS AND PANELS".
3. Remove:
   • exhaust pipe bolt ①



4. Connect:
   - temperature probe tester ①
     (to the engine oil drain bolt)
   - engine tachometer
     (to the spark plug lead)
   - exhaust attachment ②
     (to the exhaust pipe)

	Exhaust attachment **90890-03134**





5. Stop air induction system operation.

NOTE:

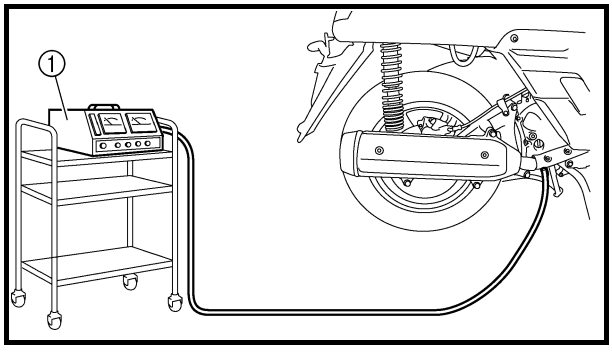
Crimp the hose ⓐ running from the lead valve to the air cut-off valve to prevent the air cut-off valve from operating.
Be sure not to damage the hose while crimping it.

6. Start the engine and warm it up until the specified oil temperature is reached.

	Oil temperature **65 ~ 75 °C (149 ~ 167 °F)**

7. Measure:
   - engine idling speed
     Out of specification → Adjust.
     Refer to "ADJUSTING THE ENGINE IDLING SPEED".

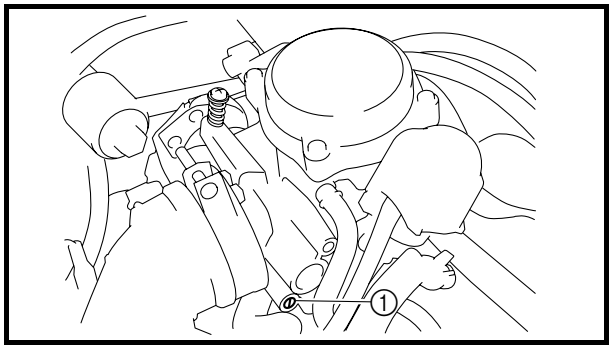
	Engine idling speed **1,550 ~ 1,650 r/min**



8. Connect:
   - CO tester ①
     (to the exhaust attachment)

9. Measure:
   • CO density
   Out of specification → Adjust.
   Within specification → Checking the air induction system.
   Refer to "AIR INDUCTION SYSTEM" in chapter 7.

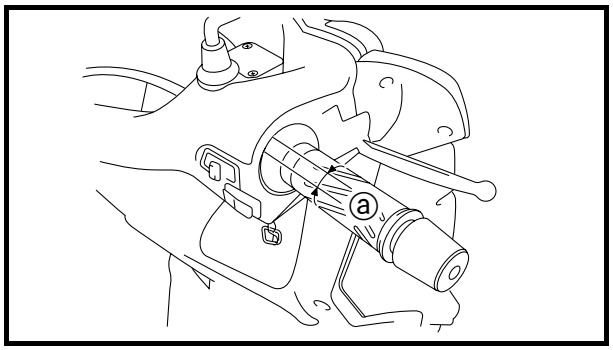
CO density (when air induction system is not operating)
6.0%



10. Adjust:
   • pilot screw ①

Pilot screw
2 turns out

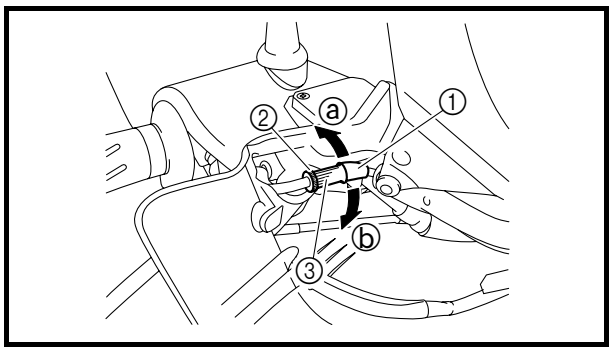
If the CO density cannot be adjusted by adjusting the pilot screw, overhaul the carburetor and check the air filter.
If there are no problems found with the carburetor or air filter, replace the muffler assembly.
11. Install:
   • footrest board
   Refer to "COVERS AND PANELS".



EAS00058
ADJUSTING THE THROTTLE CABLE FREE PLAY

1. Check:
   • throttle cable free play ⓐ
   Out of specification → Adjust.

Throttle cable free play
(at the flange of the throttle grip)
4.0 ~ 6.0 mm (0.16 ~ 0.24 in)



2. Remove:
   • front turn signal light assembly
   Refer to “COVERS AND PANELS”.

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a. Slide back the rubber cover ①.
b. Loosen the locknut ②.
c. Turn the adjusting nut ③ in direction ⓐ or ⓑ until the specified throttle cable free play is obtained.

Direction ⓐ	**Throttle cable free play is increased.**
Direction ⓑ	**Throttle cable free play is decreased.**

d. Tighten the locknut.
e. Slide the rubber cover to its original position.

⚠ WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right or left to ensure that this does not cause the engine idling speed to change.

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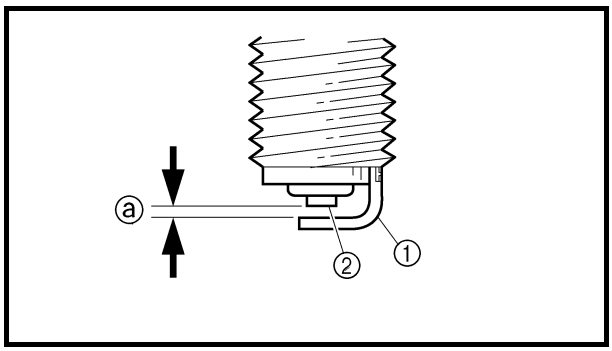
3. Install:
   • front turn signal light assembly
   Refer to “COVERS AND PANELS”.

EAS00060
CHECKING THE SPARK PLUG

1. Remove:
   • storage box
   Refer to “COVERS AND PANELS”.
2. Disconnect:
   • spark plug cap
3. Remove:
   • spark plug

CAUTION:

Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.



4. Check:
   • spark plug type
   Incorrect → Change.

Spark plug type (manufacturer)
DR8EA (NGK)

5. Check:
   • electrode ①
   Damage/wear → Replace the spark plug.
   • insulator ②
   Abnormal color → Replace the spark plug.
   Normal color is medium-to-light tan.
6. Clean:
   • spark plug
   (with a spark plug cleaner or wire brush)
7. Measure:
   • spark plug gap ⓐ
   (with a wire thickness gauge)
   Out of specification → Regap.

Spark plug gap
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

8. Install:
   • spark plug — **18 Nm (1.8 m · kg, 13 ft · lb)**

NOTE:
Before installing the spark plug, clean the spark plug and gasket surface.

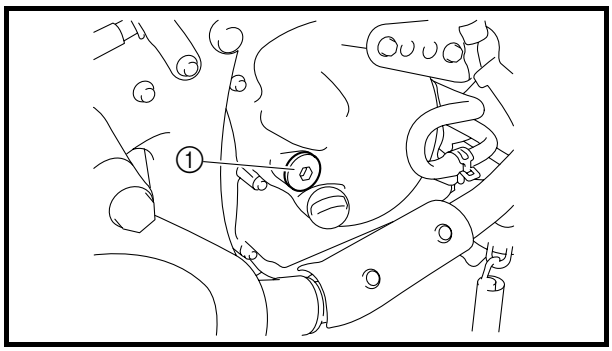
9. Connect:
   • spark plug cap
10. Install:
   • storage box
   Refer to “COVERS AND PANELS”.

EAS00064
CHECKING THE IGNITION TIMING

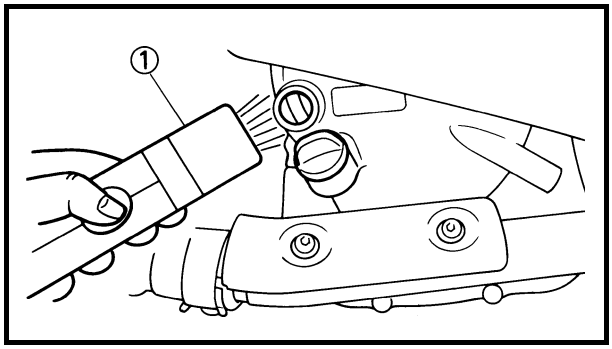
NOTE:
Prior to checking the ignition timing, check the wiring connections of the entire ignition system. Make sure that all connections are tight and free of corrosion.

1. Stand the vehicle on a level surface.

NOTE:
Place a vehicle on the centerstand.

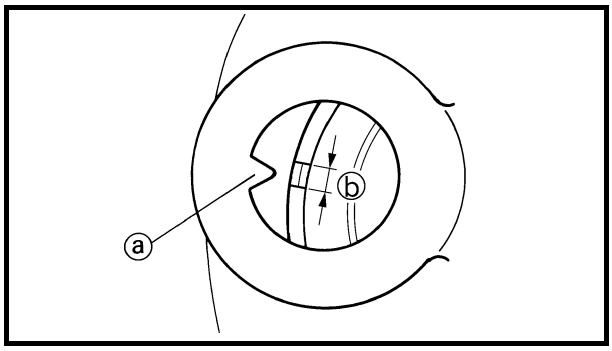


2. Remove:
   • storage box
   Refer to “COVERS AND PANELS”.
3. Remove:
   • timing mark accessing plug ①



4. Connect:
   • timing light ①
   • engine tachometer
   (to the spark plug lead)

	Timing light **90890-03141**



5. Check:
   • ignition timing

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a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.

	Engine idling speed **1,550 ~ 1,650 r/min**

b. Check that the stationary pointer ⓐ on the generator cover is within the firing range ⓑ on the generator rotor.
   Incorrect firing range → Check the ignition system.

NOTE:
The ignition timing is not adjustable.

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6. Install:
   • timing mark accessing plug

	8 Nm (0.8 m · kg, 5.8 ft · lb)

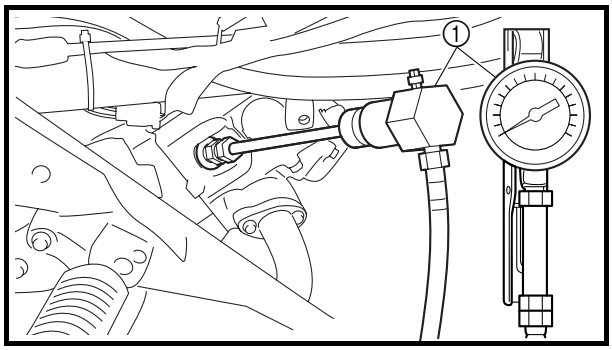
7. Install:
   • storage box
   Refer to “COVERS AND PANELS”.

EAS00067
MEASURING THE COMPRESSION PRESSURE

NOTE:
Insufficient compression pressure will result in a loss of performance.

1. Remove:
   - storage box
     Refer to “COVERS AND PANELS”.
2. Measure:
   - valve clearance
     Out of specification → Adjust.
     Refer to “ADJUSTING THE VALVE CLEARANCE”.
3. Start the engine, warm it up for several minutes, and then turn it off.
4. Disconnect:
   - spark plug cap
5. Remove:
   - spark plug

CAUTION:
Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.



6. Install:
   - compression gauge ①

	**Compression gauge 90890-03081**

7. Measure:
   • compression pressure
   Out of specification → Refer to steps (c) and (d).



Compression pressure (at sea level)
Minimum
1,120 kPa
(11.2 kg/cm², 159.3 psi)
Standard
1,400 kPa
(14.0 kg/cm², 199.1 psi)
Maximum
1,570 kPa
(15.7 kg/cm², 223.3 psi)

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a. Set the main switch to "ON".
b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠ WARNING

To prevent sparking, ground the spark plug lead before cranking the engine.

c. If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.
   Carbon deposits → Eliminate.
d. If the compression pressure is below the minimum specification, pour a teaspoonful of engine oil into the spark plug bore and measure again.
   Refer to the following table.

Compression pressure (with oil applied into the cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Piston ring(s) wear or damage → Repair.**
Same as without oil	**Piston, valves, cylinder head gasket or piston ring(s) possibly defective → Repair.**

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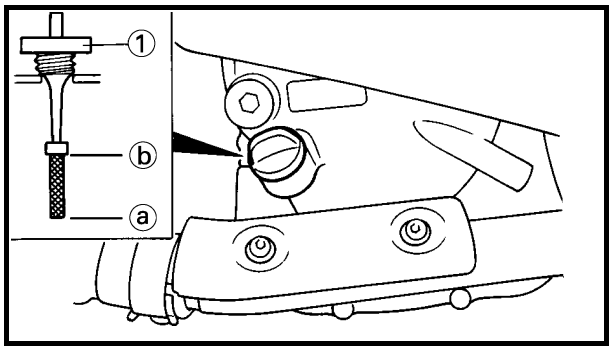
8. Install:
   • spark plug — **18 Nm (1.8 m · kg, 13 ft · lb)**
9. Connect:
   • spark plug cap
10. Install:
   • storage box
     Refer to “COVERS AND PANELS”.

EAS00070
CHECKING THE ENGINE OIL LEVEL

1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on a centerstand.
- Make sure that the vehicle is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.



3. Check:
   • engine oil level
     Wipe the dipstick ① clean, insert it into the oil filler hole (without screwing it in), and then remove it to check the oil level.
     The engine oil level should be between the minimum level mark ⓐ and maximum level mark ⓑ.
     Below the minimum level mark → Add the recommended engine oil to the proper level.

NOTE:
- Before checking the engine oil level, wait a few minutes until the oil has settled.
- Do not screw the dipstick in when inspecting the oil level.

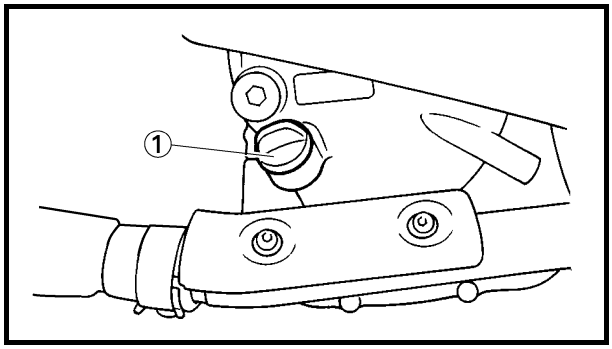
Recommended engine oil type
SAE10W30, SAE10W40, SAE15W40, SAE20W40, or SAE20W50
Recommended engine oil grade
API service SG type or higher, JASO standard MA

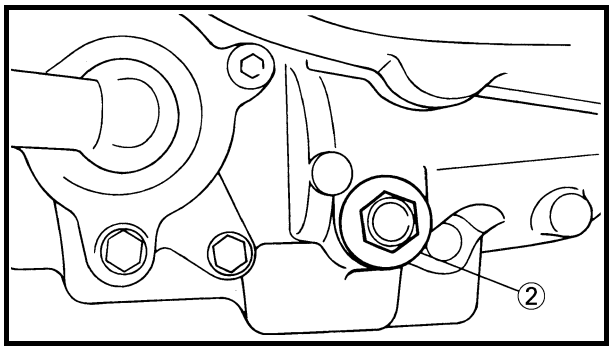
CAUTION:

Do not allow foreign materials to enter the crankcase.

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check the engine oil level again.

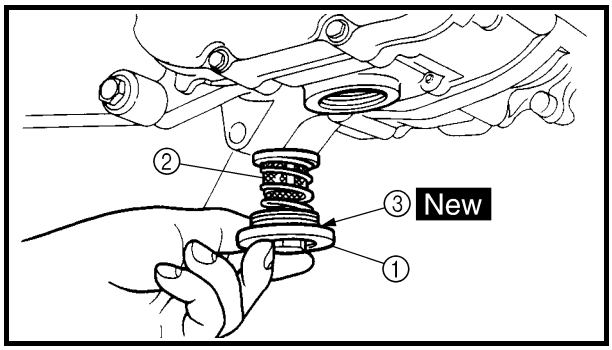
NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.





EAS00076
CHANGING THE ENGINE OIL

1. Remove:
   - storage box
   - footrest board
   Refer to "COVERS AND PANELS".
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the engine oil drain bolt.
4. Remove:
   - engine oil filler cap ①
   - engine oil drain bolt ②
   (along with the gasket)
5. Drain:
   - engine oil
   (completely from the crankcase)



6. If the oil strainer is also to be cleaned, perform the following procedure.

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a. Remove the oil strainer cover ① and oil strainer ②.
b. Install new O-ring ③.
c. Install the oil strainer cover.

	**Oil strainer cover** **32 Nm (3.2 m · kg, 23 ft · lb)**

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7. Check:
   - engine oil drain bolt gasket
   Damage → Replace.

8. Install:
   • engine oil drain bolt
   (along with the gasket)

	20 Nm (2.0 m · kg, 14 ft · lb)

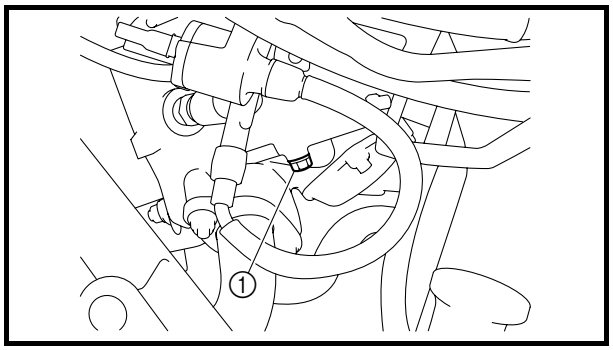
9. Fill:
   • crankcase
   (with the specified amount of the recommended engine oil)

Quantity
Total amount
1.40 L (1.23 Imp qt, 1.48 US qt)
Periodic oil change
1.20 L (1.06 Imp qt, 1.27 US qt)

10. Install:
    • engine oil filler cap
11. Start the engine, warm it up for several minutes, and then turn it off.
12. Check:
    • engine
    (for engine oil leaks)
13. Check:
    • engine oil level
    Refer to "CHECKING THE ENGINE OIL LEVEL".
14. Check:
    • engine oil pressure

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a. Slightly loosen the oil check bolt ①.
b. Start the engine and keep it idling until engine oil starts to seep from the oil check bolt. If no engine oil comes out after one minute, turn the engine off so that it will not seize.
c. Check the engine oil passages, the oil filter element and the oil pump for damage or leakage. Refer to "OIL PUMP" in chapter 5.
d. Start the engine after solving the problem(s) and check the engine oil pressure again.
e. Tighten the oil check bolt to specification.



Oil check bolt
7 Nm (0.7 m · kg, 5.1 ft · lb)

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15.Reset:
- oil change indicator

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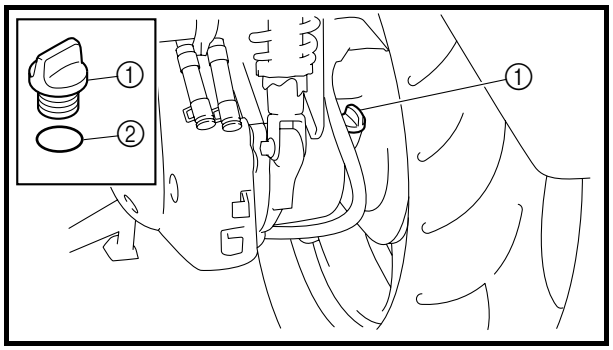
a. Set the main switch to “ON” while holding the “MODE” and “SET” buttons pushed for two to five seconds.
b. Release the buttons and the oil change indicator will go off.

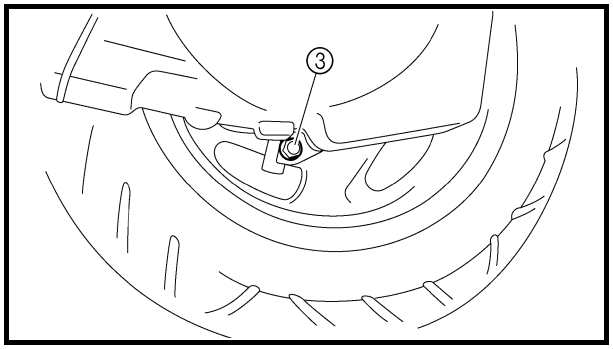
NOTE:

If the engine oil is changed before the oil change indicator comes on (i.e., before the periodic maintenance and lubrication interval has been reached), the oil change indicator must be reset as soon as possible so that it comes on for the next periodic maintenance and lubrication interval.

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16.Install:
- footrest board
- storage box
  Refer to “COVERS AND PANELS”.





CHANGING THE FINAL TRANSMISSION OIL

1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on a centerstand.
- Make sure that the vehicle is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the transmission oil drain bolt.
4. Remove:
   - final transmission oil filler cap ①
   - O-ring ②
   - transmission oil drain bolt ③
5. Drain:
   - final transmission oil
     (completely from the transmission case)

6. Install:
   • final transmission oil drain bolt

22 Nm (2.2 m · kg, 16 ft · lb)

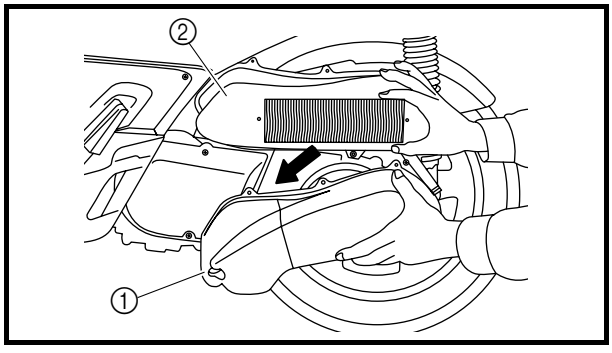
7. Fill:
   • transmission case
   (with the specified amount of the recommended transmission oil)

Recommended oil
SAE 10W30 type SE motor oil
Oil quantity
0.25 L (0.22 Imp qt, 0.26 US qt)

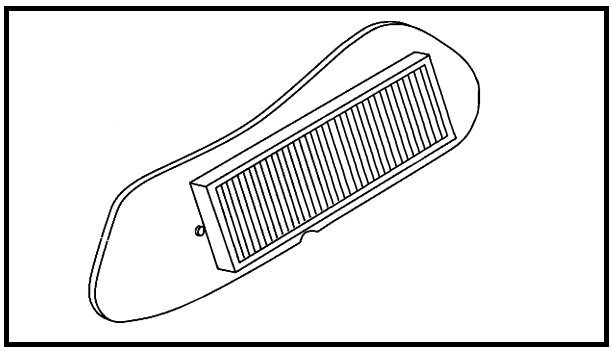
8. Install:
   • final transmission oil filler cap
   • O-ring
9. Start the engine, warm it up for several minutes, and then turn it off.
10. Check:
    • transmission case
    (for transmission oil leaks)

EAS00089
REPLACING THE AIR FILTER ELEMENT

NOTE:
On the bottom of the air filter case is a check hoses. If dust or water or both collects in this hose, remove the clamp from it, and then remove the plug to drain the hose and clean the air filter case.



1. Remove:
   • air filter case cover ①
   • air filter element ②



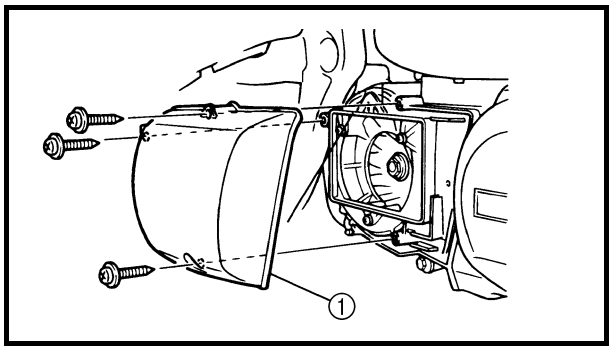
2. Check:
   • air filter element
     Damage → Replace.

NOTE:
- Replace the air filter element every 20,000 km of operation.
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.

3. Install:
   • air filter element
   • air filter case cover

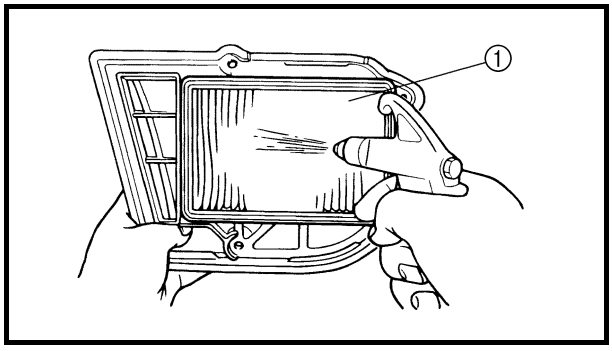
CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.



EAS00091
CLEANING THE V-BELT CASE AIR FILTER ELEMENT

1. Remove:
   • center panel 1 (left)
     Refer to “COVERS AND PANELS”.
2. Remove:
   • V-belt case air filter cover ①



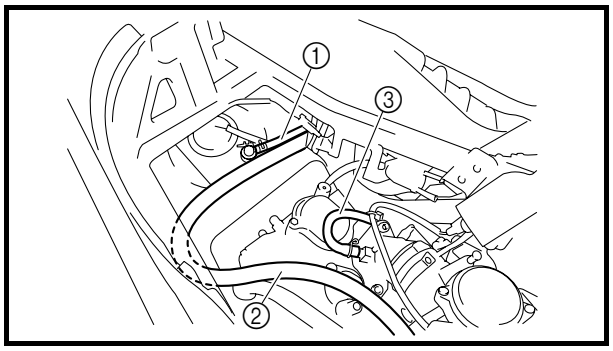
3. Clean:
   • V-belt case air filter element ①
     Blow the compressed air to the outer surface of the V-belt case air filter element.

4. Check:
   • V-belt case air filter element
   Damage → Replace.

CAUTION:

Since the V-belt case air filter element is a dry type, do not let grease or water contact it.

5. Install:
   • V-belt case air filter cover
6. Install:
   • center panel 1 (left)
   Refer to “COVERS AND PANELS”.

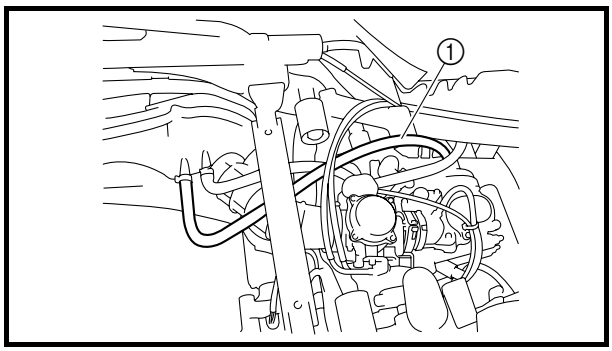


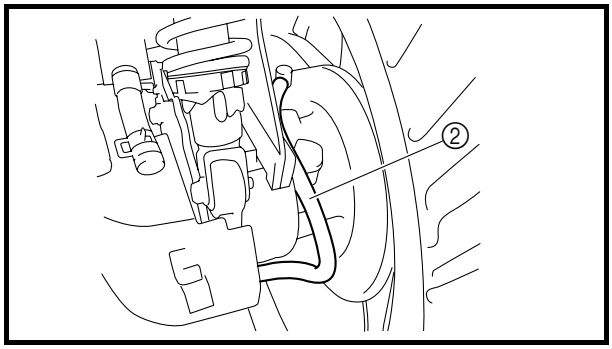
EAS00096
CHECKING THE FUEL AND VACUUM HOSES

1. Remove:
   • storage box
   Refer to “COVERS AND PANELS”.
2. Check:
   • fuel hose (fuel tnak to fuel pump) ①
   • fuel hose (fuel pump to carburetor) ②
   • air induction system vacuum hose ③
   Cracks/damage → Replace.
   Loose connection → Connect properly.
3. Install:
   • storage box
   Refer to “COVERS AND PANELS”.

EAS00098
CHECKING THE BREATHER HOSES

1. Remove:
   • storage box
   Refer to “COVERS AND PANELS”.



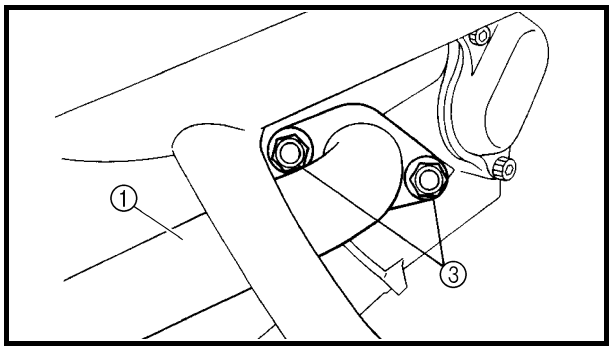


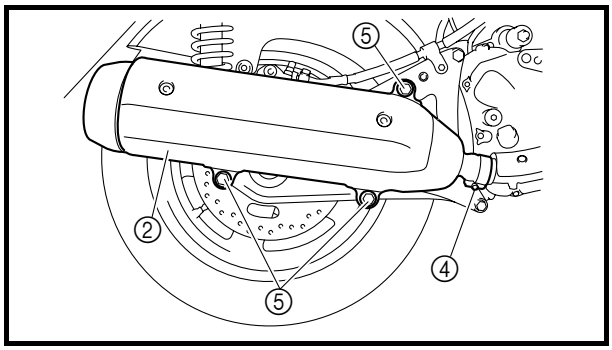
2. Check:
   - cylinder head breather hose ①
   - transmission case breather hose ②
     Cracks/damage → Replace.
     Loose connection → Connect properly.

CAUTION:

Make sure the cylinder head breather hose and transmission case breather hose are routed correctly.

3. Install:
   - storage box
     Refer to “COVERS AND PANELS”.



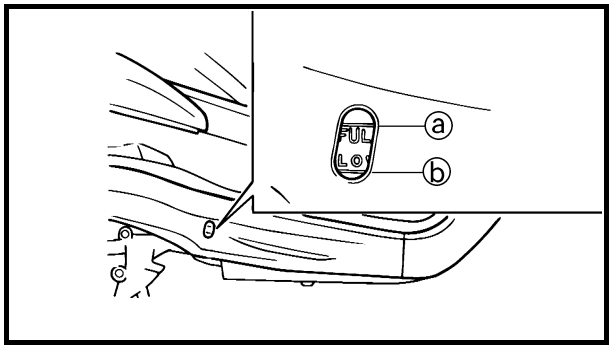


EAS00100
CHECKING THE EXHAUST SYSTEM

1. Remove:
   - center panel 1 (right)
     Refer to “COVERS AND PANELS”.
2. Check:
   - exhaust pipe ①
   - muffler ②
     Cracks/damage → Replace.
   - gaskets
     Exhaust gas leaks → Replace.
3. Check:
   - tightening torque

Exhaust pipe nut ③
20 Nm (2.0 m · kg, 14 ft · lb)
Muffler joint bolt ④
14 Nm (1.4 m · kg, 10 ft · lb)
Muffler mounting bolt ⑤
65 Nm (6.5 m · kg, 47 ft · lb)

4. Install:
   - center panel 1 (right)
     Refer to “COVERS AND PANELS”.



EAS00103
CHECKING THE COOLANT LEVEL

1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on a centerstand.
- Make sure that the vehicle is upright.

2. Check:
   - coolant level

     The coolant level should be between the maximum level mark ⓐ and minimum level mark ⓑ.

     Below the minimum level mark → Add the recommended coolant to the proper level.

CAUTION:
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check and, if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

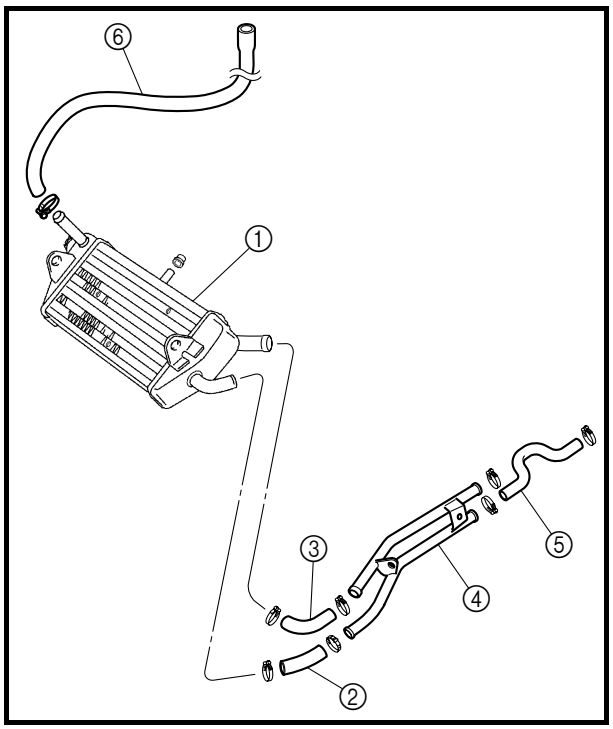
3. Start the engine, warm it up for several minutes, and then turn it off.
4. Check:
   - coolant level

NOTE:
Before checking the coolant level, wait a few minutes until it settles.

EAS00104
CHECKING THE COOLING SYSTEM

1. Remove:
   - footrest board
   - storage box

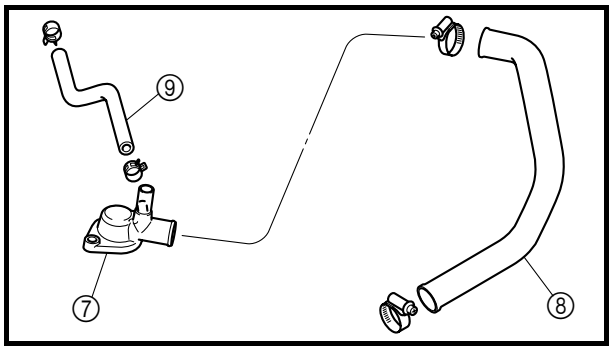
     Refer to “COVERS AND PANELS”.

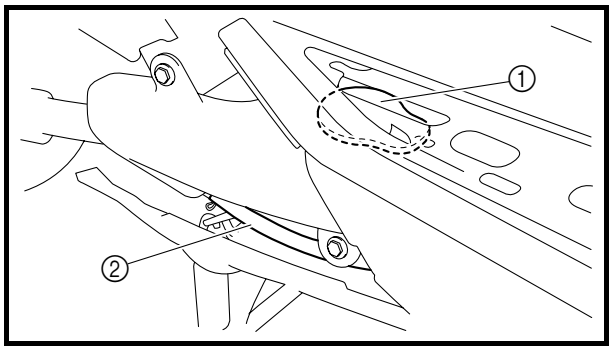


2. Check:
   - radiator ①
   - radiator outlet hose ②
   - radiator inlet hose ③
   - radiator inlet/outlet pipe ④
   - water pump inlet hose ⑤
   - radiator filler hose ⑥
   - thermostat cover ⑦
   - thermostat outlet hose ⑧
   - thermostat inlet hose ⑨

   Cracks/damage → Replace.
3. Install:
   - storage box
   - footrest board

   Refer to “COVERS AND PANELS”.



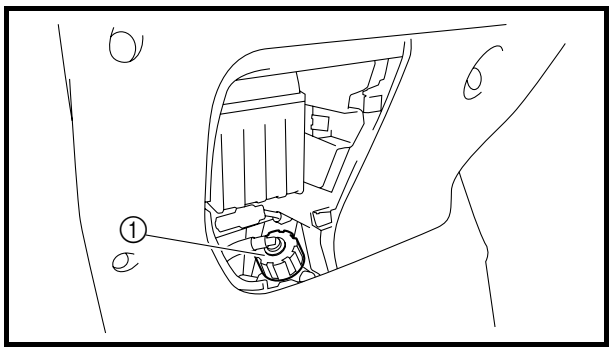


EAS00105
CHANGING THE COOLANT

1. Remove:
   - battery cover
   - center panel 1 (right)
   - footrest board mat (right)
   - storage box

   Refer to “COVERS AND PANELS”.
2. Remove:
   - coolant reservoir cap ①
3. Disconnect:
   - coolant reservoir hose ②
4. Drain:
   - coolant

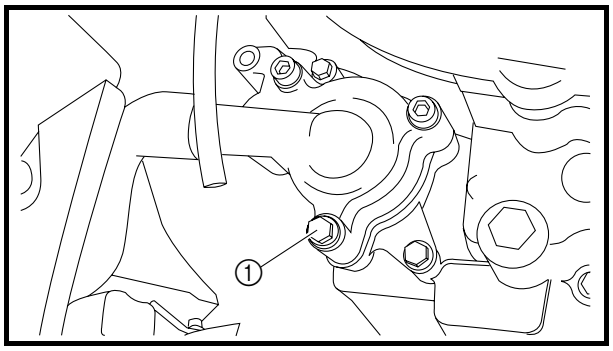
   (completely from the coolant reservoir)



5. Remove:
   • radiator cap ①

⚠ WARNING

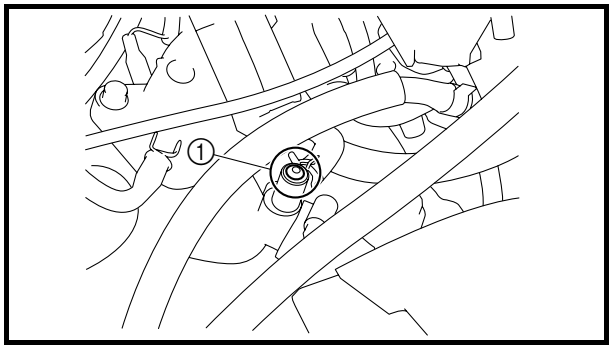
A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise to allow any residual pressure to escape. When the hissing sound has stopped, remove the cap.



6. Remove:
   • coolant drain bolt ①
   (along with the copper washer)
7. Drain:
   • coolant
   (completely from the engine and radiator)
8. Install:
   • copper washer **New**
   • coolant drain bolt

10 Nm (1.0 m · kg, 7.2 ft · lb)

9. Connect:
   • coolant reservoir hose



10.Fill:
- cooling system
  (with the specified amount of the recommended coolant to the specified level)

Recommended antifreeze
High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines
Mixing ratio
1:1 (antifreeze:water)
Quantity
Radiator and engine capacity
0.70 L
(0.62 Imp qt, 0.74 US qt)
Coolant reservoir capacity
0.26 L
(0.23 Imp qt, 0.28 US qt)
Up to the maximum level mark

NOTE:
The specified amount of coolant is a standard amount. Fill the cooling system with coolant until coolant comes out of the air bleed bolt hole ①.

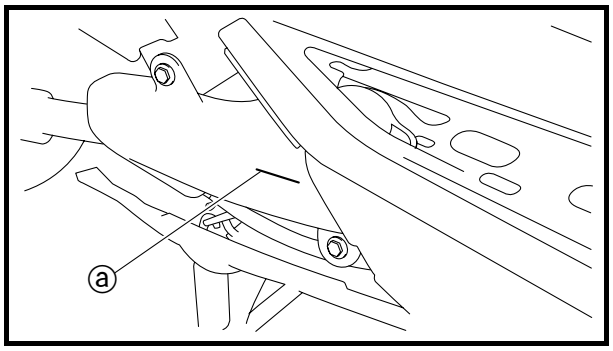
Handling notes for coolant
Coolant is potentially harmful and should be handled with special care.

⚠ WARNING
- **If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
- **If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
- **If coolant is swallowed, induce vomiting and get immediate medical attention.**

CAUTION:

- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**
- **If coolant comes into contact with painted surfaces, immediately wash them with water.**
- **Do not mix different types of antifreeze.**

11. Install:
    - radiator cap



12. Fill:
    - coolant reservoir
      (with the recommended coolant to the maximum level mark ⓐ)
13. Tighten:
    - air bleed bolt (coolant)
14. Install:
    - coolant reservoir cap
15. Start the engine, warm it up for several minutes, and then turn it off.
16. Check:
    - coolant level
      Refer to “CHECKING THE COOLANT LEVEL”.

NOTE:

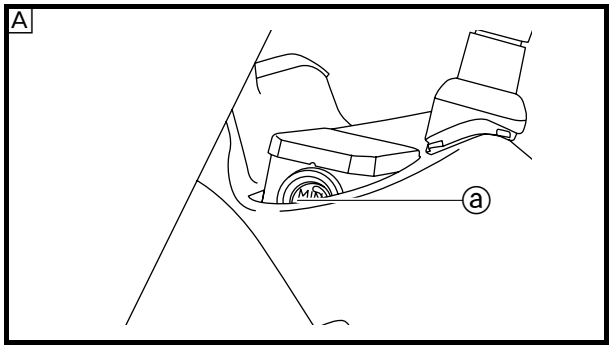
Before checking the coolant level, wait a few minutes until the coolant has settled.

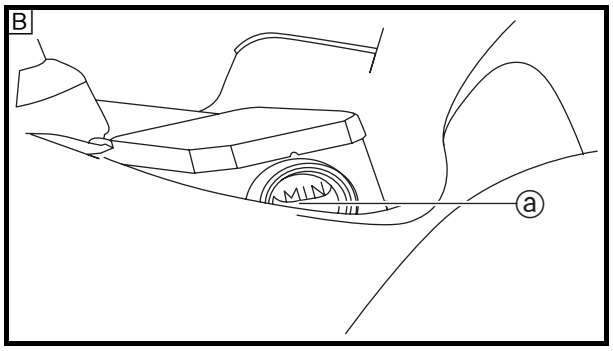
17. Install:
    - storage box
    - footrest board mat (right)
    - center panel 1 (right)
    - battery cover
      Refer to “COVERS AND PANELS”.

EAS01160
CHASSIS
CHECKING THE BRAKE FLUID LEVEL

1. Stand the vehicle on a level surface.

NOTE:
- Place the vehicle on the centerstand.
- Make sure the vehicle is upright.





2. Check:
   - brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.

Recommended brake fluid
DOT 4

A Front brake
B Rear brake

⚠ WARNING

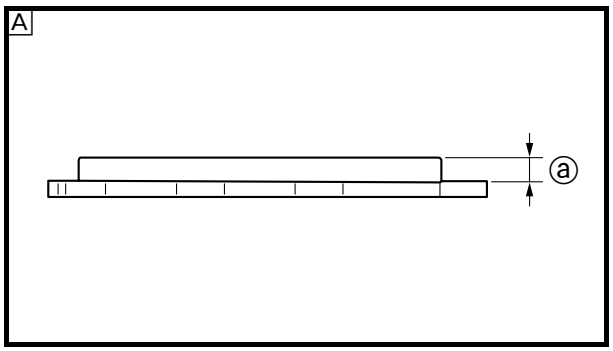
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

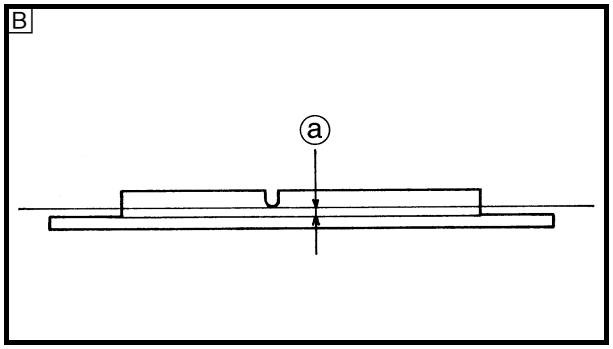
CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

In order to ensure a correct reading of the brake fluid level, make sure the top of the brake master cylinder reservoir is horizontal.





EAS01220

CHECKING THE FRONT AND REAR BRAKE PADS

The following procedure applies to all of the brake pads.

1. Operate the brake.
2. Check:
   - front brake pad
     Wear limit ⓐ reached → Replace the brake pads as a set.

Brake pad lining thickness limit
0.5 mm (0.02 in)

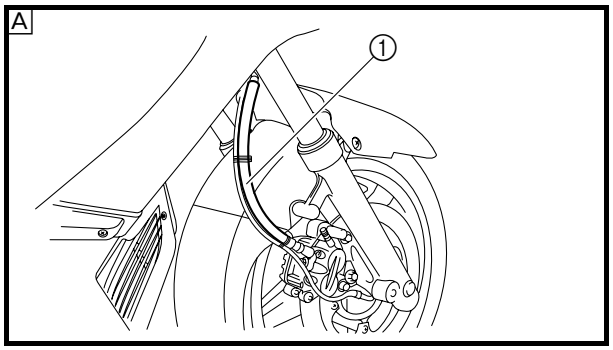
Refer to "REPLACING THE FRONT BRAKE PADS" in chapter 4.

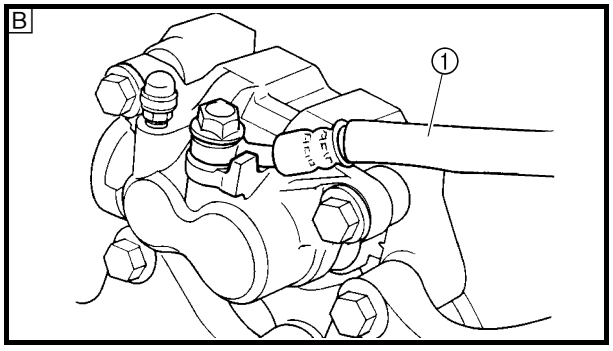
   - rear brake pad
     Wear limit ⓐ reached → Replace the brake pads as a set.

Brake pad lining thickness limit
0.8 mm (0.03 in)

Refer to "REPLACING THE REAR BRAKE PADS" in chapter 4.

A Front brake
B Rear brake





EAS01320

CHECKING THE FRONT AND REAR BRAKE HOSES

The following procedure applies to all of the brake hoses and brake hose clamps.

1. Check:
   - brake hoses ①
     Cracks/damage/wear → Replace.

A Front brake
B Rear brake

2. Check:
   - brake hose clamps
     Loose → Tighten the clamp bolt.
3. Hold the vehicle upright and apply the brake several times.
4. Check:
   - brake hoses
     Brake fluid leakage → Replace the damaged hose.
     Refer to "FRONT AND REAR BRAKES" in chapter 4.

EAS01350
BLEEDING THE HYDRAULIC BRAKE SYSTEM

⚠ WARNING

Bleed the hydraulic brake system whenever:
- **the system is disassembled.**
- **a brake hose is loosened, disconnected or replaced.**
- **the brake fluid level is very low.**
- **brake operation is faulty.**

NOTE:
- Be careful not to spill any brake fluid or allow the brake master cylinder reservoir to overflow.
- When bleeding the hydraulic brake system, make sure there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

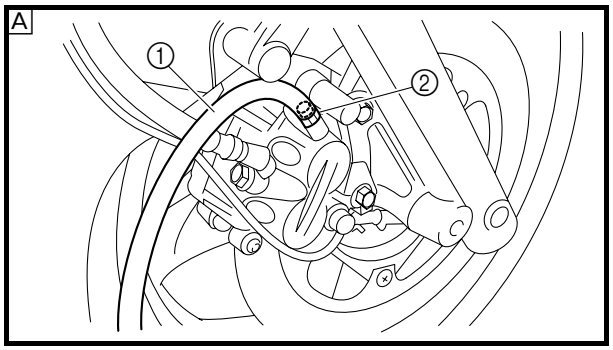
1. Bleed:
   - hydraulic brake system

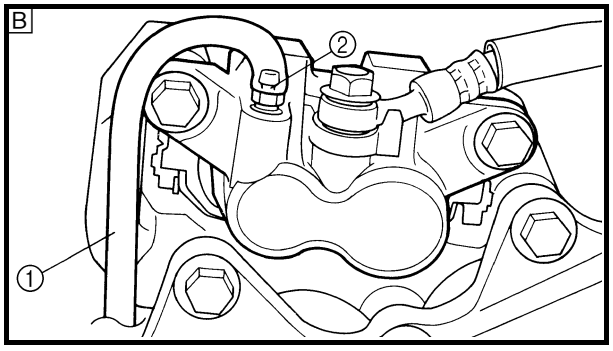
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a. Fill the brake master cylinder reservoir to the proper level with the recommended brake fluid.
b. Install the brake master cylinder reservoir diaphragm.
c. Connect a clear plastic hose ① tightly to the bleed screw ②.

A Front brake caliper
B Rear brake caliper

d. Place the other end of the hose into a container.
e. Slowly apply the brake several times.
f. Fully squeeze the brake lever and hold it in position.





g. Loosen the bleed screw.

NOTE:
Loosening the bleed screw will release the pressure and cause the brake lever to contact the handlebar.

h. Tighten the bleed screw and then release the brake lever.
i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
j. Tighten the bleed screw to specification.



Bleed screw (front brake caliper)
6 Nm (0.6 m · kg, 4.3 ft · lb)
Bleed screw (rear brake caliper)
6 Nm (0.6 m · kg, 4.3 ft · lb)

k. Fill the brake master cylinder reservoir to the proper level with the recommended brake fluid.
Refer to "CHECKING THE BRAKE FLUID LEVEL".

⚠ WARNING
After bleeding the hydraulic brake system, check the brake operation.

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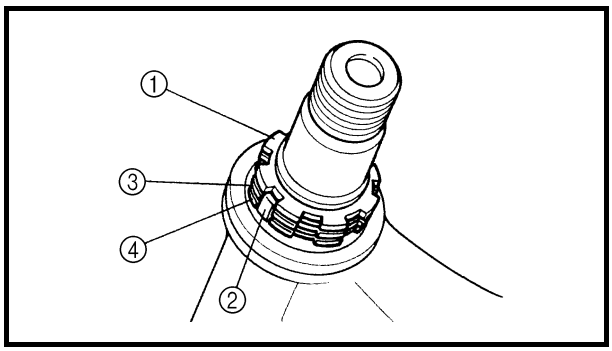
EAS01480
CHECKING AND ADJUSTING THE STEERING HEAD

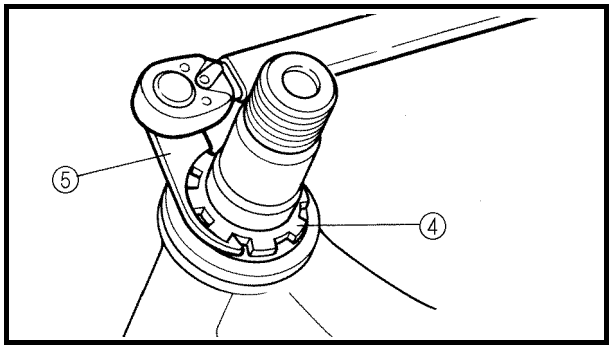
1. Stand the vehicle on a level surface.

⚠ WARNING
Securely support the vehicle so that there is no danger of it falling over.

NOTE:
Place the vehicle on a suitable stand so that the front wheel is elevated.

2. Check:
- steering head
Grasp the bottom of the front fork legs and gently rock the front fork.
Binding/looseness → Adjust the steering head.





3. Remove:
   • handlebar lower holder
   Refer to "STEERING HEAD" in chapter 4.
4. Adjust:
   • steering head

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a. Remove the upper ring nut ①, lock washer ②, the center ring nut ③ and the rubber washer.
b. Loosen the lower ring nut ④ and then tighten it to specification with the steering nut wrench ⑤.

NOTE:

- Be sure to install all the ring nuts with the broad side of the inner tapered section facing down.
- Set the torque wrench at a right angle to the steering nut wrench.

	**Steering nut wrench** **90890-01403**

	**Lower ring nut (initial tightening torque)** **38 Nm (3.8 m · kg, 27 ft · lb)**

c. Loosen the lower ring nut ④ 1/4 of turn and then tighten it to specification with a steering nut wrench.

⚠ WARNING

Do not overtighten the lower ring nut.

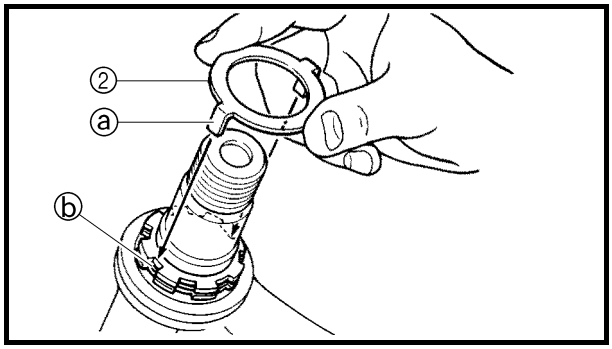
	**Lower ring nut (final tightening torque)** **22 Nm (2.2 m · kg, 16 ft · lb)**

d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
   Refer to "STEERING HEAD" in chapter 4.
e. Install the rubber washer.
f. Install the center ring nut.

g. Finger tighten the center ring nut, then align the slots of both ring nuts. If necessary, hold the lower ring nut and tighten the center ring nut until their slots are aligned.

NOTE:
When aligning the slots, align them by turning the center ring nut in the tightening direction.

h. Install the lock washer ②.



NOTE:
Make sure the lock washer tabs ⓐ sit correctly in the ring nut slots ⓑ.

i. Hold the lower and center ring nuts with a steering nut wrench and tighten the upper ring nut with a steering nut wrench.

	**Steering nut wrench** **90890-01403**
	**Upper ring nut** **75 Nm (7.5 m · kg, 54 ft · lb)**

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5.Install:
- handlebar lower holder
  Refer to “STEERING HEAD” in chapter 4.

EAS01510
CHECKING THE FRONT FORK

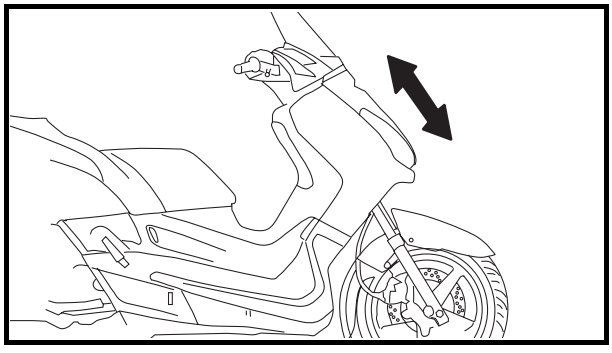
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Check:
- inner tube
  Damage/scratches → Replace.
- oil seal
  Oil leakage → Replace.

3. Hold the vehicle upright and apply the front brake.



4. Check:
- front fork operation
  Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
  Rough movement → Repair.
  Refer to “FRONT FORK” in chapter 4.

EAS01600
ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLIES

The following procedure applies to both of the rear shock absorber assemblies.

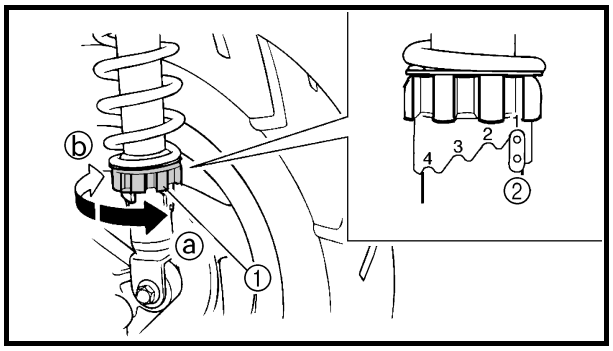
⚠ WARNING

- **Securely support the vehicle so that there is no danger of it falling over.**
- **Always adjust both rear shock absorber assemblies evenly. Uneven adjustment can result in poor handling and loss of stability.**

Spring preload

CAUTION:

Never go beyond the maximum or minimum adjustment positions.



1. Adjust:
   - spring preload

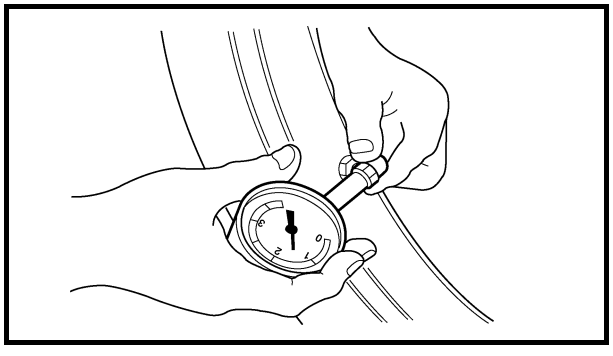
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a. Turn the adjusting ring ① in direction ⓐ or ⓑ.
   Align the desired position on the adjusting ring with the stopper ②.

Direction ⓐ	**Spring preload is increased (suspension is harder).**
Direction ⓑ	**Spring preload is decreased (suspension is softer).**

Adjusting positions
Minimum: 1
Standard: 1
Maximum: 4

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EAS01630
CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
   - tire pressure
     Out of specification → Regulate.

⚠ WARNING

- **The tire pressure should only be checked and regulated when the tire temperature is at ambient air temperature.**
- **The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.**
- **Operation of an overloaded vehicle could cause tire damage, an accident or an injury.**

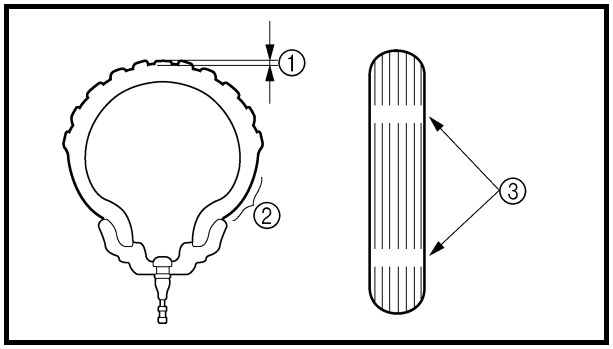
NEVER OVERLOAD THE VEHICLE.

Basic weight (with oil and a full fuel tank)	**176 kg (388 lb)**	
Maximum load*	**180 kg (397 lb)**	
Cold tire pressure	**Front**	**Rear**
Up to 90 kg (198 lb) load*	**190 kPa (1.90 kgf/cm², 28 psi)**	**220 kPa (2.20 kgf/cm², 32 psi)**
90 kg (198 lb) ~ maximum load*	**210 kPa (2.10 kgf/cm², 30 psi)**	**250 kPa (2.50 kgf/cm², 36 psi)**

* Total weight of rider, passenger, cargo and accessories

⚠ WARNING

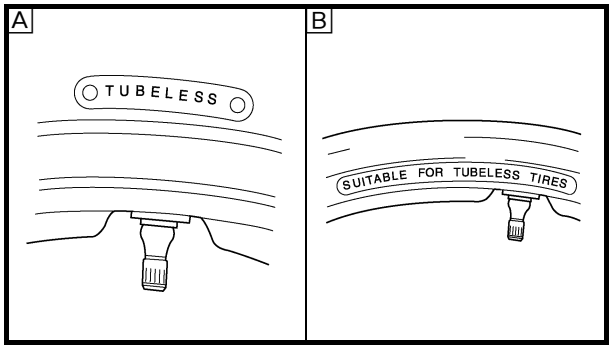
It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.



2. Check:
   - tire surfaces
     Damage/wear → Replace the tire.

	Minimum tire tread depth 1.6 mm (0.06 in)

① Tire tread depth
② Sidewall
③ Wear indicator



⚠ WARNING

- **Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.**
- **When using tube tires, be sure to install the correct tube.**
- **Always replace a new tube tire and a new tube as a set.**
- **To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.**
- **Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.**

A Tire
B Wheel

Tube wheel	**Tube tire only.**
Tubeless wheel	**Tube or tubeless tire.**

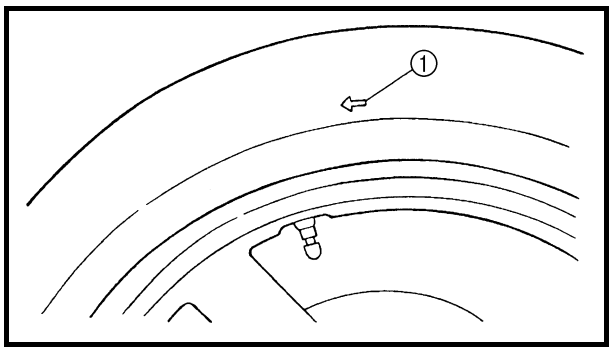
- **After extensive tests, the tires listed below have been approved by Yamaha Motor España, S.A. Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this vehicle.**

Front tire

Manufacturer	Model	Size
MICHELIN	GOLD STANDARD	120/70-15 M/C 56S
PIRELLI	GTS23	120/70-15 M/C 56P

Rear tire

Manufacturer	Model	Size
MICHELIN	GOLD STANDARD	140/70-14 M/C 68S
PIRELLI	GTS24	140/70-14 M/C 68P

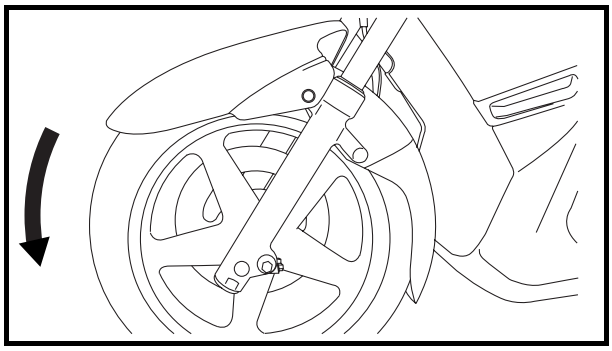


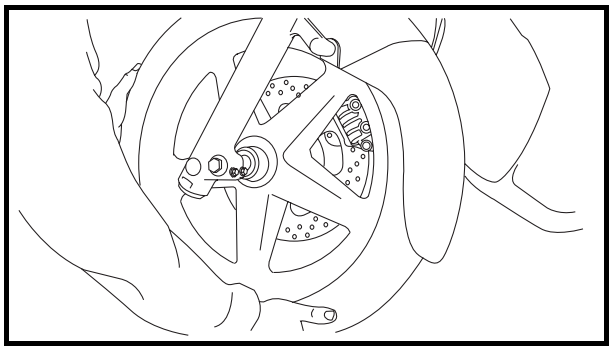
⚠ WARNING

New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.

NOTE:

For tires with a rotation direction mark ①:
Install the tire with the mark pointing in the direction of the wheel rotation.





EAS01680
CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
   - wheel
     Damage/out-of-round → Replace.

⚠ WARNING

Never attempt to make any repairs to the wheel.

NOTE:

After a tire or wheel has been changed or replaced, always balance the wheel.

EAS01700
CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the inner and outer cables.

⚠ WARNING

Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cable as soon as possible.

1. Check:
   - outer cable
     Damage → Replace.
2. Check:
   - cable operation
     Rough movement → Lubricate.

Recommended lubricant
Engine oil or a suitable cable lubricant

NOTE:

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAS01720
LUBRICATING THE SIDESTAND

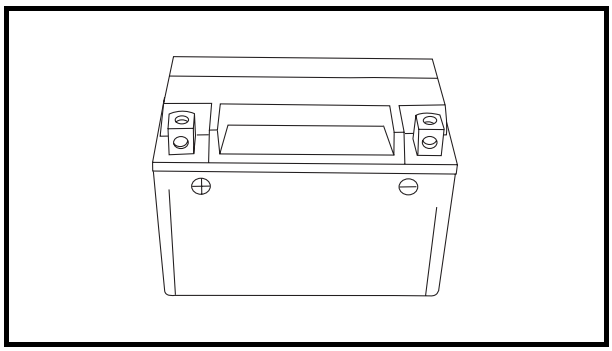
Lubricate the pivoting point and metal-to-metal moving parts of the sidestand.

Recommended lubricant
Lithium-soap-based grease

EAS01730
LUBRICATING THE CENTERSTAND

Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

Recommended lubricant
Lithium-soap-based grease



EAS01790

ELECTRICAL SYSTEM

CHECKING AND CHARGING THE BATTERY

⚠ WARNING

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- **Wear protective eye gear when handling or working near batteries.**
- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**
- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**

FIRST AID IN CASE OF BODILY CONTACT:
EXTERNAL

- **Skin — Wash with water.**
- **Eyes — Flush with water for 15 minutes and get immediate medical attention.**

INTERNAL

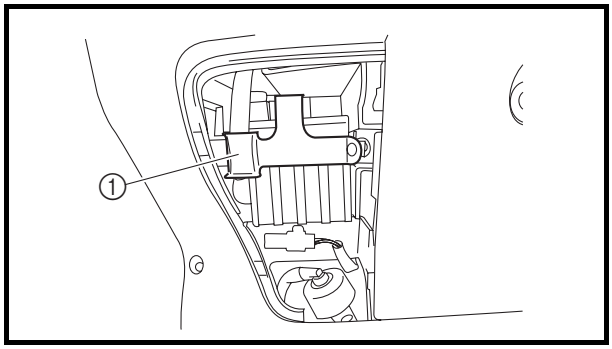
- **Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.**

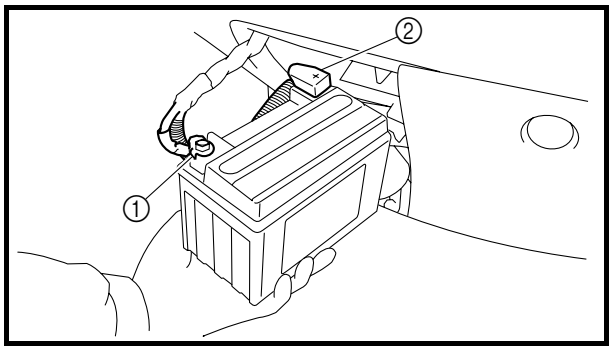
CAUTION:

- **This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.**
- **Charging time, charging amperage and charging voltage for an MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.**

NOTE:
Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.

1. Remove:
   • battery cover
   Refer to "COVERS AND PANELS".
2. Remove:
   • battery bracket ①





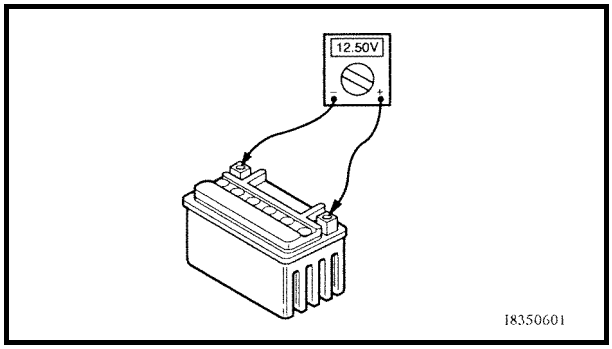
3. Disconnect:
   • battery leads
   (from the battery terminals)

CAUTION:
First, disconnect the negative battery lead ①, and then the positive battery lead ②.

4. Remove:
   • battery
5. Check:
   • battery charge

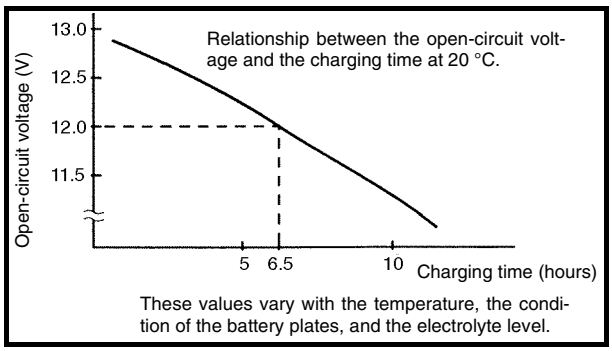
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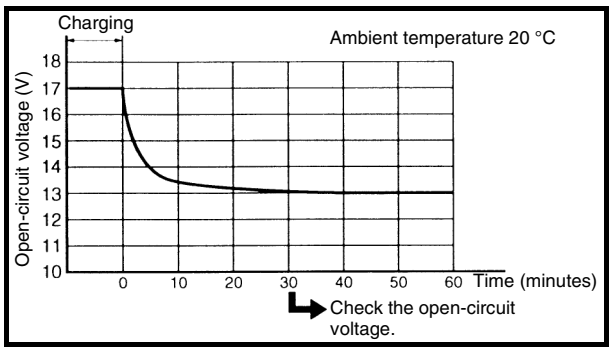
a. Connect a pocket tester to the battery terminals.

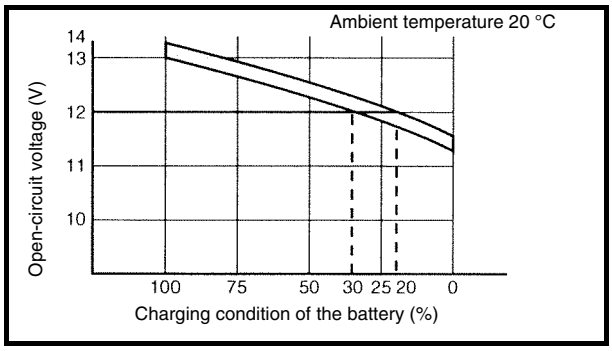


Positive tester probe →
positive battery terminal
Negative tester probe →
negative battery terminal

NOTE:
- The charge state of an MF battery can be checked by measuring its open-circuit voltage (i.e., the voltage when the positive terminal is disconnected).
- No charging is necessary when the open-circuit voltage equals or exceeds 12.8 V.







b. Check the charge of the battery, as shown in the charts and the following example.

Example

c. Open-circuit voltage = 12.0 V
d. Charging time = 6.5 hours
e. Charge of the battery = 20 ~ 30%

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6. Charge:
   • battery
   (Refer to the appropriate charging method illustration.)

⚠ WARNING

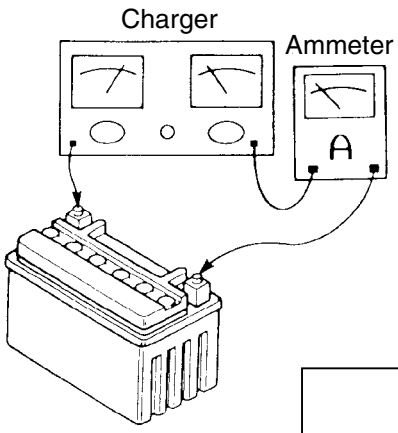
Do not quick charge a battery.

CAUTION:

- **Never remove the MF battery sealing caps.**
- **Do not use a high-rate battery charger since it forces a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.**
- **If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.**
- **When charging a battery, be sure to remove it from the vehicle. (If charging has to be done with the battery mounted on the vehicle, disconnect the negative battery lead from the battery terminal.)**
- **To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.**
- **Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.**
- **Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.**

- **If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!**
- **As shown in the following illustration, the open-circuit voltage of an MF battery stabilizes about 30 minutes after charging has been completed. Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.**

Charging method using a variable-current (voltage) charger



Measure the open-circuit voltage prior to charging.

Connect a charger and ammeter to the battery and start charging.

Is the amperage higher than the standard charging amperage written on the battery?

NOTE:
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

NOTE:
Set the charging voltage to 16 ~ 17 V. (If the charging voltage is lower charging will be insufficient, if it is higher, the battery will be over-charged.)

YES

NO

Adjust the charging voltage to 20 ~ 25 V.

Monitor the amperage for 3 ~ 5 minutes. Is the standard charging amperage exceeded?

YES

Adjust the voltage to obtain the standard charging amperage.

NO

If the amperage does not exceed the standard charging amperage after 5 minutes, replace the battery.

Set the timer to the charging time determined by the open-circuit voltage.
Refer to "CHECKING AND CHARGING THE BATTERY".

If the required charging time exceeds 5 hours, it is advisable to check the charging amperage after 5 hours. If there is any charge in the amperage, readjust the voltage to obtain the standard charging amperage.

Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V → Charging is complete.
12.0 ~ 12.7 V → Recharging is required.
Under 12.0 V → Replace the battery.

Charging method using a constant voltage charger

Measure the open-circuit voltage prior to charging.

NOTE:
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

Connect a charger and ammeter to the battery and start charging.

Is the amperage higher than the standard charging amperage written on the battery?

YES

Charge the battery until the charging voltage reaches 15 V.

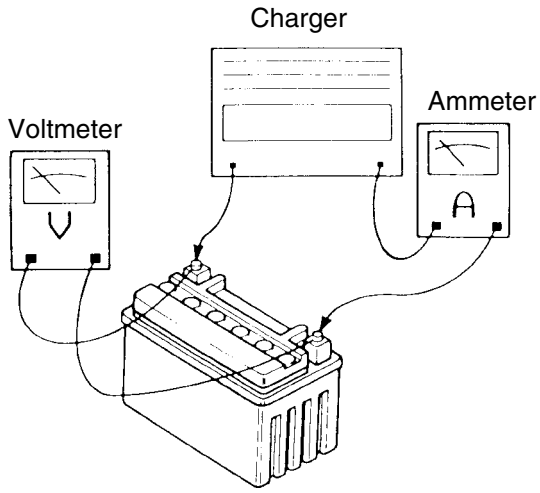
NOTE:
Set the charging time to a maximum of 20 hours.

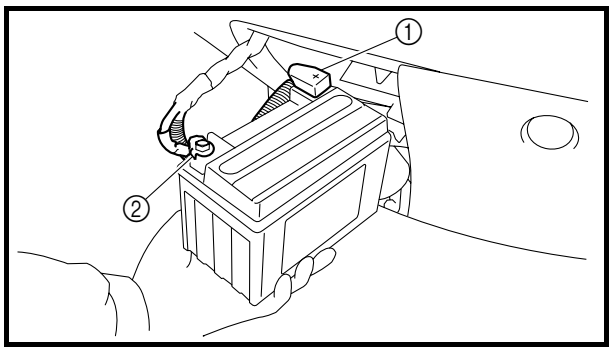
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V → Charging is complete.
12.0 ~ 12.7 V → Recharging is required.
Under 12.0 V → Replace the battery.

CAUTION:
Constant amperage chargers are not suitable for charging MF batteries.

NO

This type of battery charger cannot charge an MF battery. A variable voltage charger is recommended.





7. Install:
   • battery
8. Connect:
   • battery leads
     (to the battery terminals)

CAUTION:

First, connect the positive battery lead ①, and then the negative battery lead ②.

9. Check:
   • battery terminals
     Dirt → Clean with a wire brush.
     Loose connection → Connect properly.
10. Lubricate:
    • battery terminals

	Recommended lubricant **Dielectric grease**

11. Install:
    • battery bracket

23 Nm (2.3 m · kg, 17 ft · lb)

12. Install:
    • battery cover
      Refer to “COVERS AND PANELS”.

EAS01810

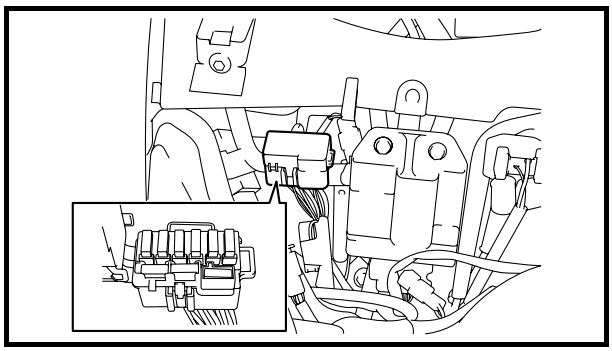
CHECKING THE FUSES

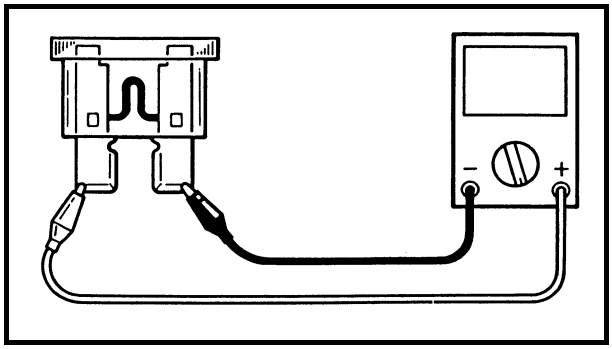
The following procedure applies to all of the fuses.

CAUTION:

To avoid a short circuit, always set the main switch to “OFF” when checking or replacing a fuse.

1. Remove:
   • upper panel
     Refer to “COVERS AND PANELS”.





2. Check:
   • fuse

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a. Connect the pocket tester to the fuse and check the continuity.

NOTE:
Set the pocket tester selector to "Ω × 1".

	Pocket tester **90890-03112**

b. If the pocket tester indicates "∞", replace the fuse.

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3. Replace:
   • blown fuse

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a. Set the main switch to "OFF".
b. Install a new fuse of the correct amperage rating.
c. Set on the switches to verify if the electrical circuit is operational.
d. If the fuse immediately blows again, check the electrical circuit.

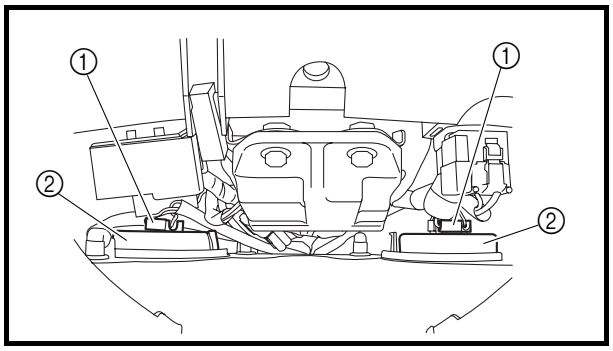
Fuses	Amperage rating	Q'ty
Main	30 A	1
Headlight	15 A	1
Signaling system	15 A	1
Radiator fan motor	10 A	1
Ignition	5 A	1
CDI unit	5 A	1
Backup (meter assembly)	5 A	1
Reserve	30 A 15 A 10 A 5 A	1 1 1 1

⚠ WARNING

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.

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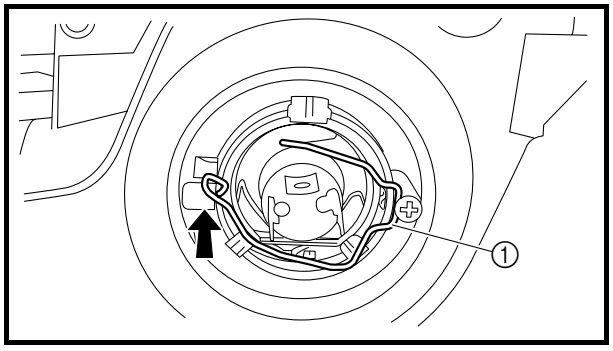
4. Install:
   - upper panel
     Refer to “COVERS AND PANELS”.



EAS01830
REPLACING THE HEADLIGHT BULBS

The following procedure applies to both of the headlight bulbs.

1. Remove:
   - upper panel
     Refer to “COVERS AND PANELS”.
2. Disconnect:
   - headlight coupler ①
3. Remove:
   - headlight bulb cover ②



4. Detach:
   - headlight bulb holder ①
5. Remove:
   - headlight bulb

⚠ WARNING

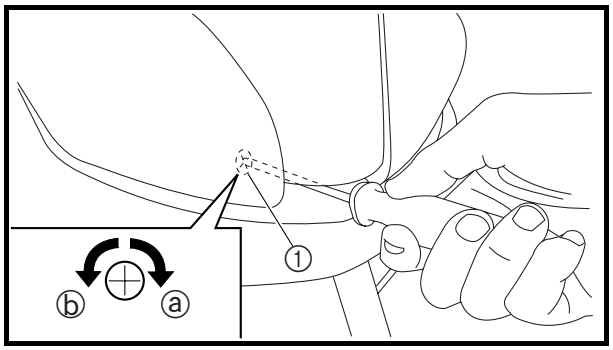
Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

6. Install:
   • headlight bulb New
   Secure the new headlight bulb with the headlight bulb holder.

CAUTION:

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

7. Attach:
   • headlight bulb holder
8. Install:
   • headlight bulb cover
9. Connect:
   • headlight coupler
10. Install:
    • upper panel
    Refer to “COVERS AND PANELS”.



EAS01860
ADJUSTING THE HEADLIGHT BEAM

1. Adjust:
   • headlight beam (vertically)

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a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Headlight beam is raised.**
Direction ⓑ	**Headlight beam is lowered.**

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CHAPTER 4
CHASSIS

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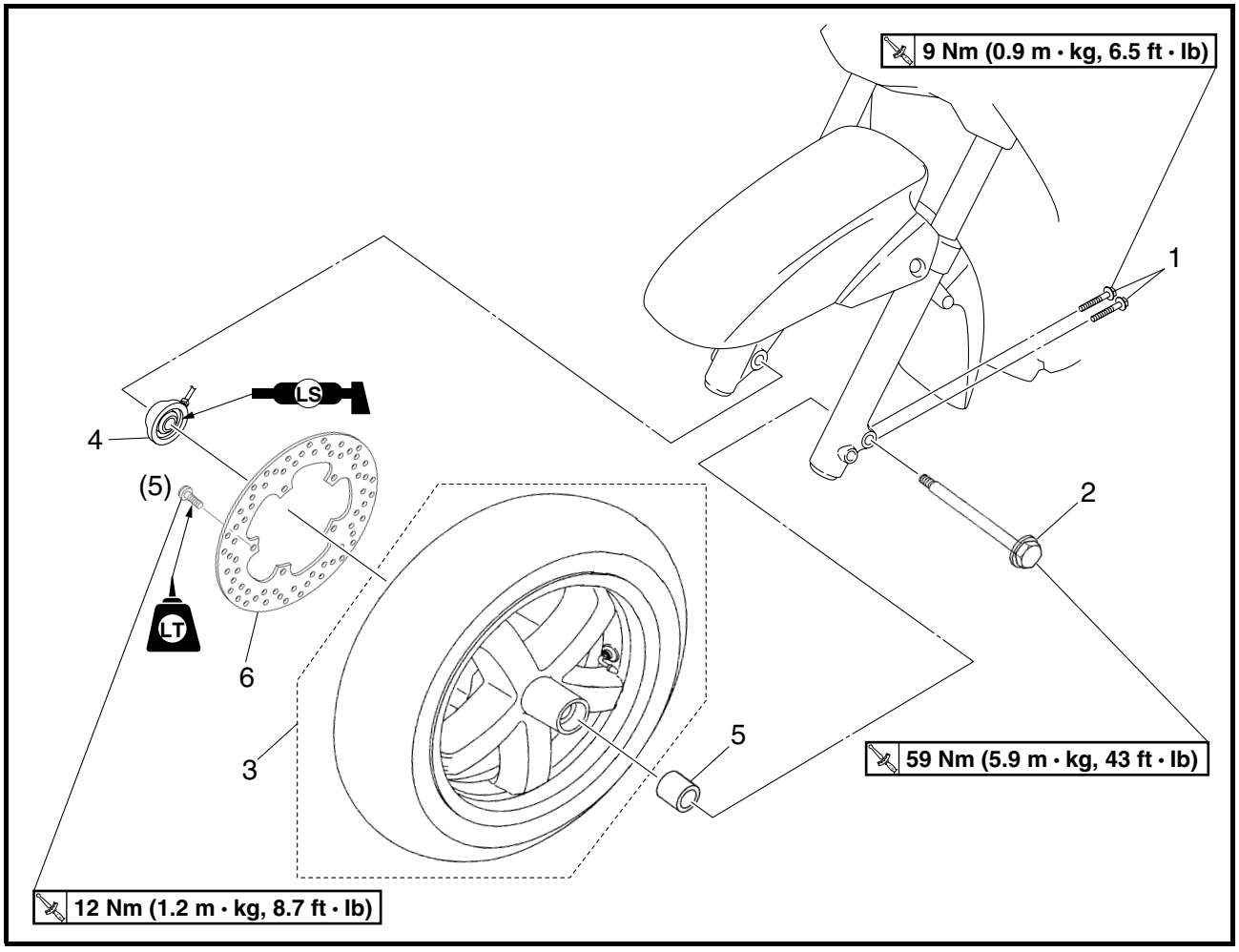
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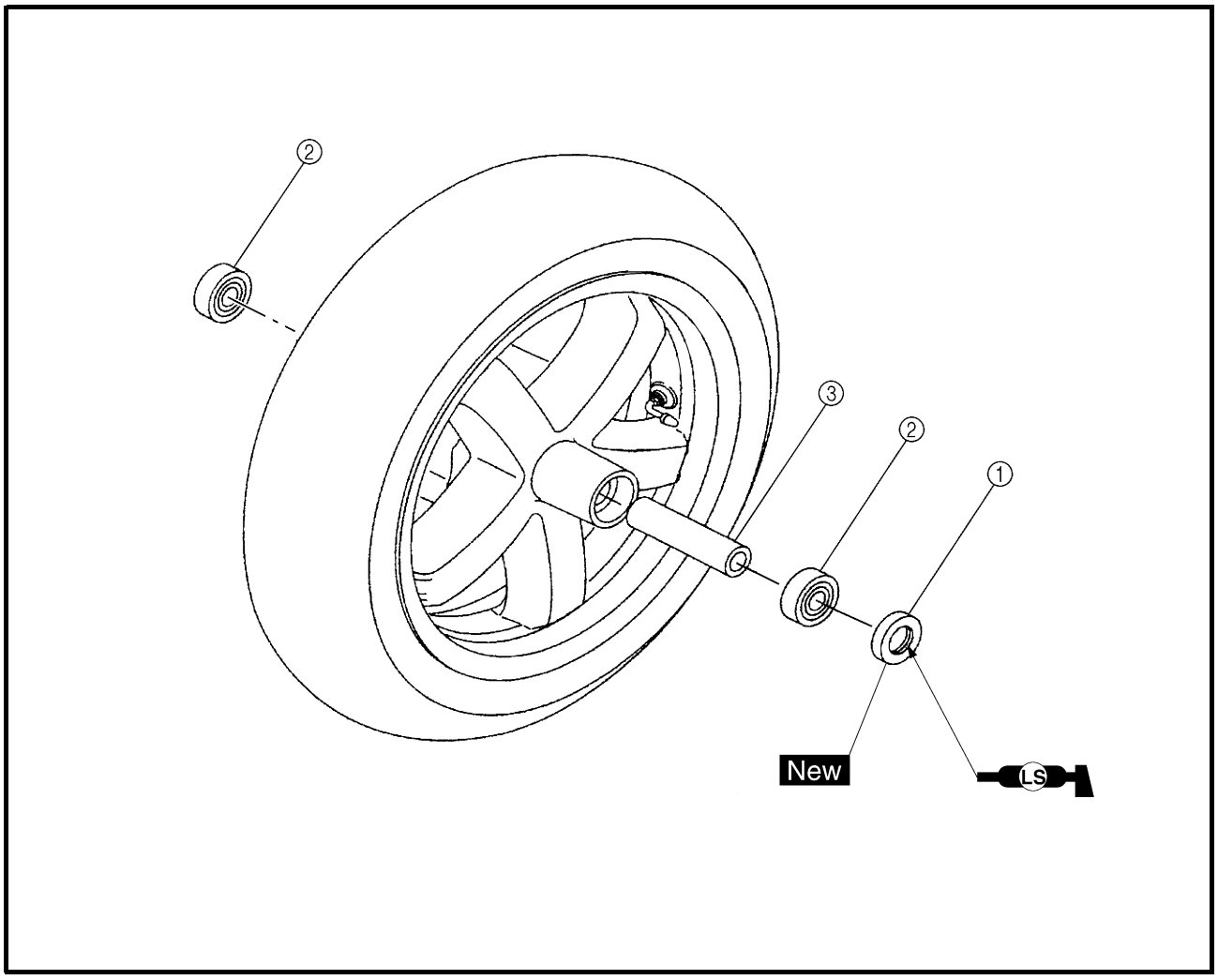
CHASSIS

FRONT WHEEL AND BRAKE DISC



Order	Job/Part	Q'ty	Remarks
	Removing the front wheel and brake disc		Remove the parts in the order listed.
1	Front wheel axle pinch bolt	2	Loosen.
2	Front wheel axle	1	Refer to "REMOVING THE FRONT WHEEL" and "INSTALLING THE FRONT WHEEL".
3	Front wheel	1	
4	Speed sensor	1	
5	Spacer	1	
6	Front brake disc	1	
			For installation, reverse the removal procedure.

EAS05130



Order	Job/Part	Q'ty	Remarks
	Disassembling the front wheel		Remove the parts in the order listed.
①	Oil seal	1	
②	Bearing	2	
③	Collar	1	
			For assembly, reverse the disassembly procedure.

EAS05200
REMOVING THE FRONT WHEEL

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Elevate:
   - front wheel

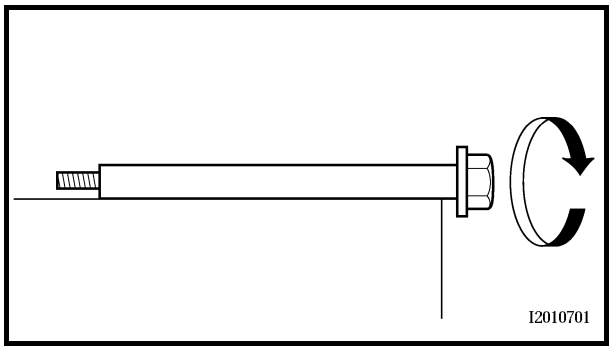
NOTE:

Place the vehicle on a suitable stand so that the front wheel is elevated.

3. Remove:
   - front wheel
   - speed sensor
   - spacer

NOTE:

Do not squeeze the front brake lever when removing the front wheel.



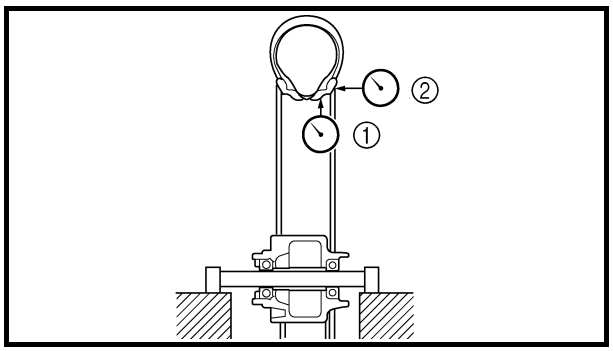
EAS05250
CHECKING THE FRONT WHEEL

1. Check:
   - wheel axle
     Roll the wheel axle on a flat surface.
     Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent wheel axle.

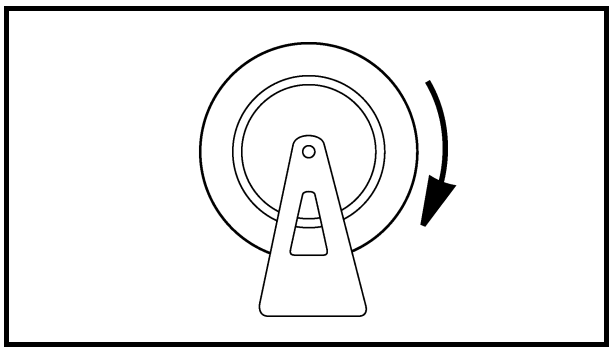
2. Check:
   - tire
   - front wheel
     Damage/wear → Replace.
     Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.



3. Measure:
   - radial wheel runout ①
   - lateral wheel runout ②

   Over the specified limits → Replace.

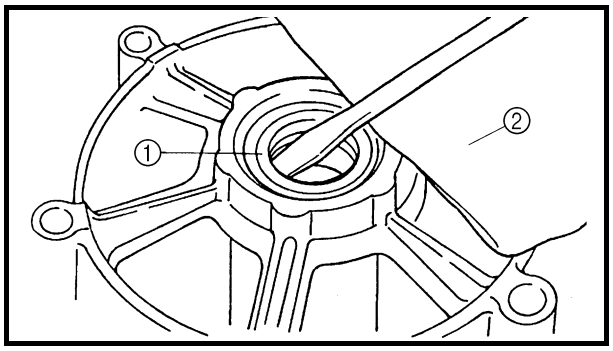
Radial wheel runout limit
1.0 mm (0.04 in)
Lateral wheel runout limit
0.5 mm (0.02 in)



4. Check:
   - wheel bearings

     Front wheel turns roughly or is loose → Replace the wheel bearings.
   - oil seal

     Damage/wear → Replace.



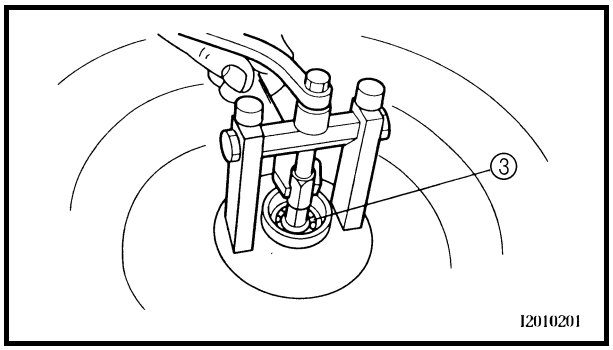
5. Replace:
   - wheel bearings New
   - oil seal New

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a. Clean the outside of the front wheel hub.
b. Remove the oil seal ① with a flat-head screwdriver.

NOTE:

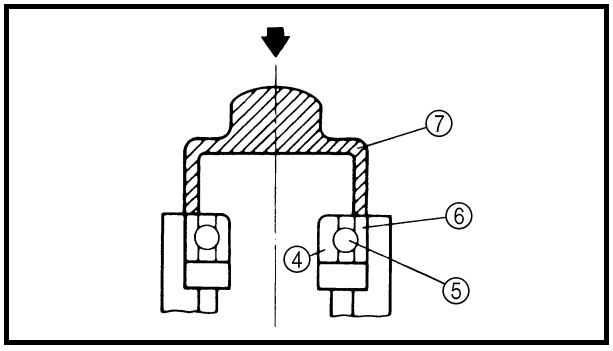
To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.



c. Remove the wheel bearings ③ with a general bearing puller.
d. Install the new wheel bearings and oil seal in the reverse order of disassembly.

CAUTION:

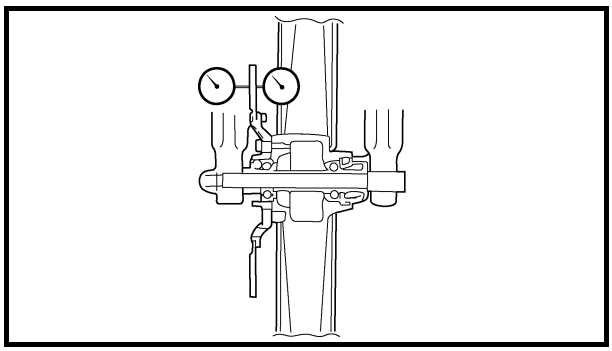
Do not contact the wheel bearing inner race ④ or ball ⑤. Contact should be made only with the outer race ⑥.



NOTE:

Use a socket ⑦ that matches the diameter of the wheel bearing outer race and oil seal.

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EAS05280
CHECKING THE BRAKE DISC

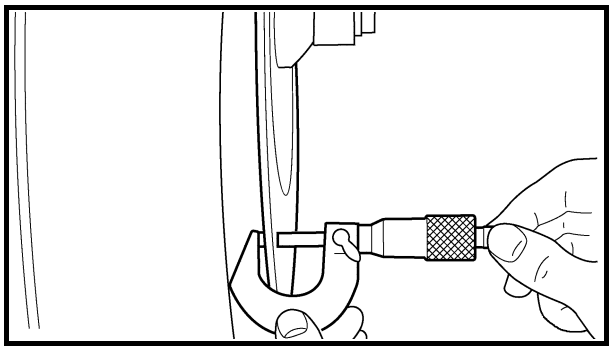
1. Check:
   - brake disc
     Damage/galling → Replace.
2. Measure:
   - brake disc deflection
     Out of specification → Correct the brake disc deflection or replace the brake disc.

Brake disc deflection limit (maximum)
Front: 0.10 mm (0.0039 in)
Rear: 0.15 mm (0.0059 in)

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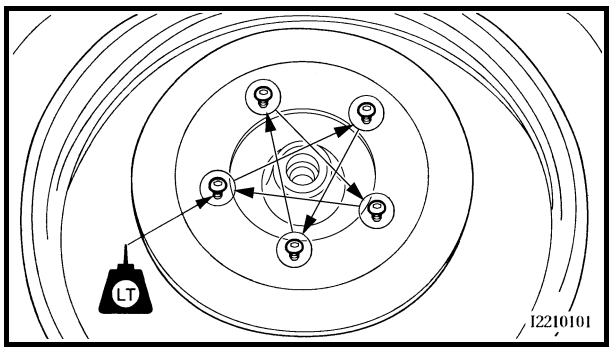
a. Place the vehicle on a suitable stand so that the front wheel is elevated.
b. Before measuring the front brake disc deflection, turn the handlebar to the left or right to ensure that the front wheel is stationary.
c. Remove the brake caliper.
d. Hold the dial gauge at a right angle against the brake disc surface.
e. Measure the deflection 1.5 mm (0.059 in) below the edge of the brake disc.

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3. Measure:
   - brake disc thickness
     Measure the brake disc thickness at a few different locations.
     Out of specification → Replace.

Brake disc thickness limit (minimum)
Front: 4.5 mm (0.18 in)
Rear: 4.5 mm (0.18 in)



4. Adjust:
   • brake disc deflection

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a. Remove the brake disc.
b. Rotate the brake disc by one bolt hole.
c. Install the brake disc.

NOTE:

- Install the brake disc with the recessed bolt holes facing outward. (For front brake disc)
- Tighten the brake disc bolts in stages and in a crisscross pattern.



Brake disc bolt
12 Nm (1.2 m · kg, 8.7 ft · lb)
LOCTITE®

d. Measure the brake disc deflection.
e. If out of specification, repeat the adjustment steps until the brake disc deflection is within specification.
f. If the brake disc deflection cannot be brought within specification, replace the brake disc.

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EAS05480
ADJUSTING THE FRONT WHEEL STATIC BALANCE

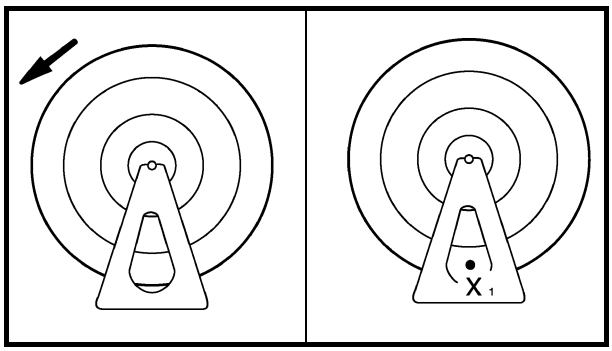
NOTE:

- After replacing the tire, wheel or both, the front wheel static balance should be adjusted.
- Adjust the front wheel static balance with the brake disc installed.

1. Remove:
   • balancing weight(s)
2. Find:
   • front wheel's heavy spot

NOTE:

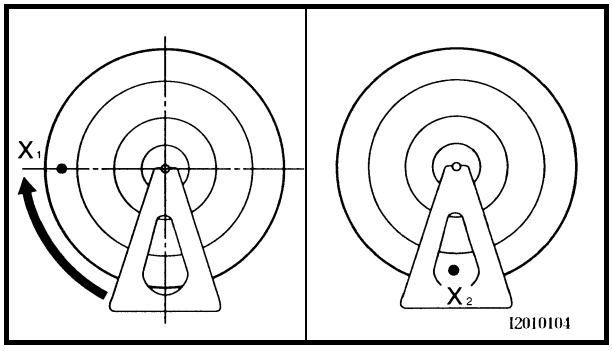
Place the front wheel on a suitable balancing stand.

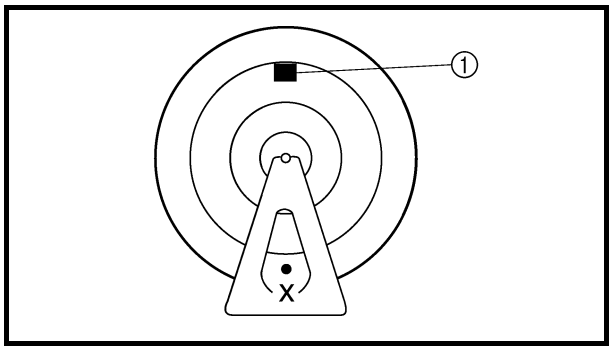


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a. Spin the front wheel.
b. When the front wheel stops, put an "X_1" mark at the bottom of the wheel.
c. Turn the front wheel 90° so that the "X_1" mark is positioned as shown.
d. Release the front wheel.
e. When the wheel stops, put an "X_2" mark at the bottom of the wheel.
f. Repeat steps (d) through (f) several times until all the marks come to rest at the same spot.
g. The spot where all the marks come to rest is the front wheel's heavy spot "X".

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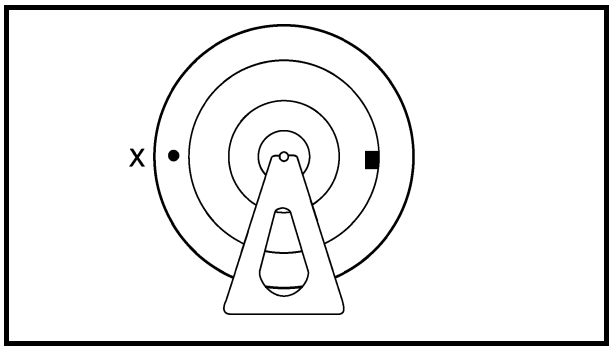


3. Adjust:
   • front wheel static balance

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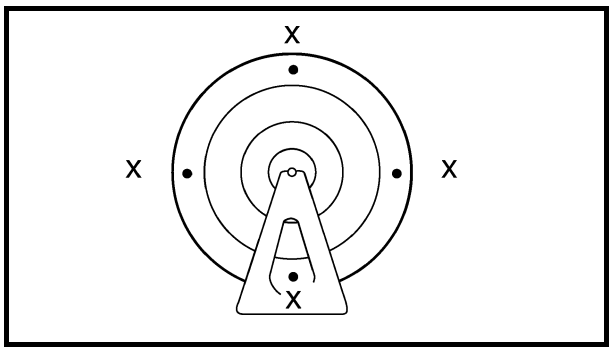
a. Install a balancing weight ① onto the rim exactly opposite the heavy spot "X".

NOTE:
Start with the lightest weight.



b. Turn the front wheel 90° so that the heavy spot is positioned as shown.
c. If the heavy spot does not stay in that position, install a heavier weight.
d. Repeat steps (b) and (c) until the front wheel is balanced.

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4. Check:
   • front wheel static balance

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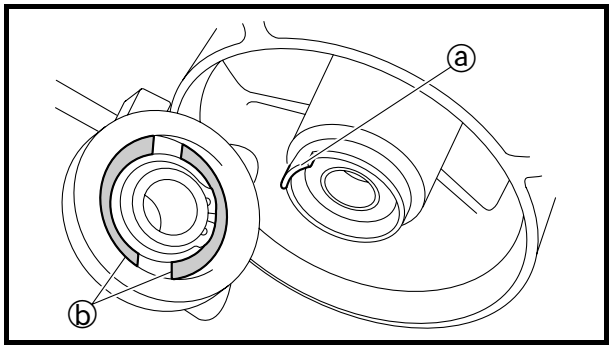
a. Turn the front wheel and make sure it stays at each position shown.
b. If the front wheel does not remain stationary at all of the positions, rebalance it.

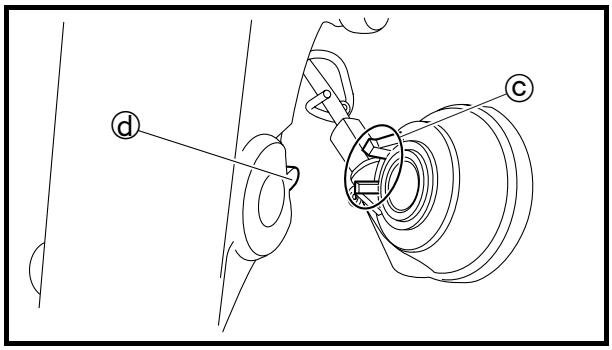
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EAS05420
INSTALLING THE FRONT WHEEL

1. Lubricate:
   - oil seal lips
   - speed sensor

	Recommended lubricant **Lithium-soap-based grease**





2. Install:
   - spacer
   - speed sensor
   - front wheel

NOTE:

- Make sure that the speed sensor and the wheel hub are installed with the projection ⓐ of the wheel hub inserted in a slot ⓑ of the speed sensor.
- When installing the speed sensor, make sure that the projection on the wheel hub does not damage the lip of the speed sensor oil seal.
- Make sure that the slot ⓒ in the speed sensor fits over the stopper ⓓ on the outer tube.

3. Tighten:
   - front wheel axle

	59 Nm (5.9 m · kg, 43 ft · lb)

   - front wheel axle pinch bolts

	9 Nm (0.9 m · kg, 6.5 ft · lb)

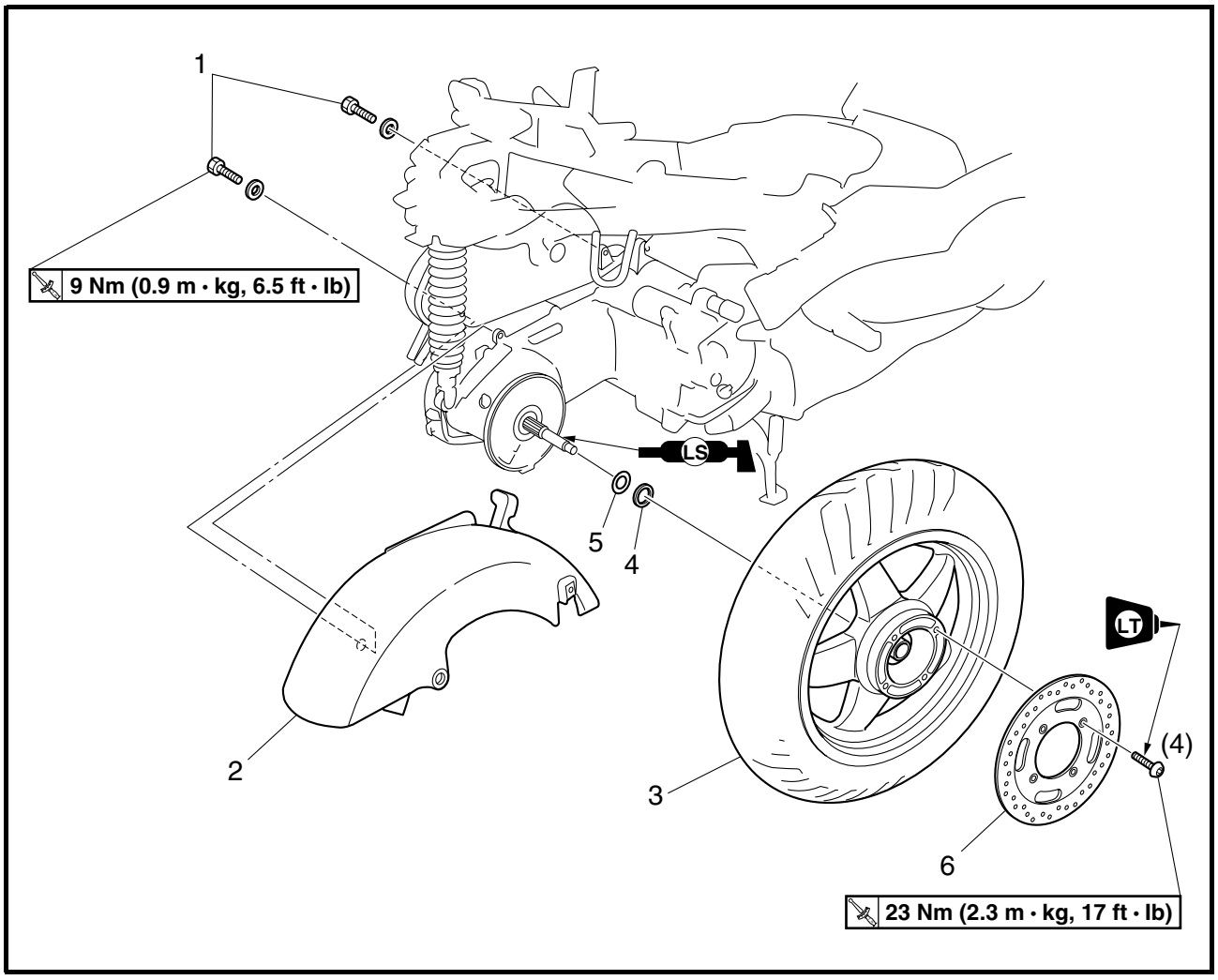
⚠ WARNING

Make sure the brake hose is routed properly.

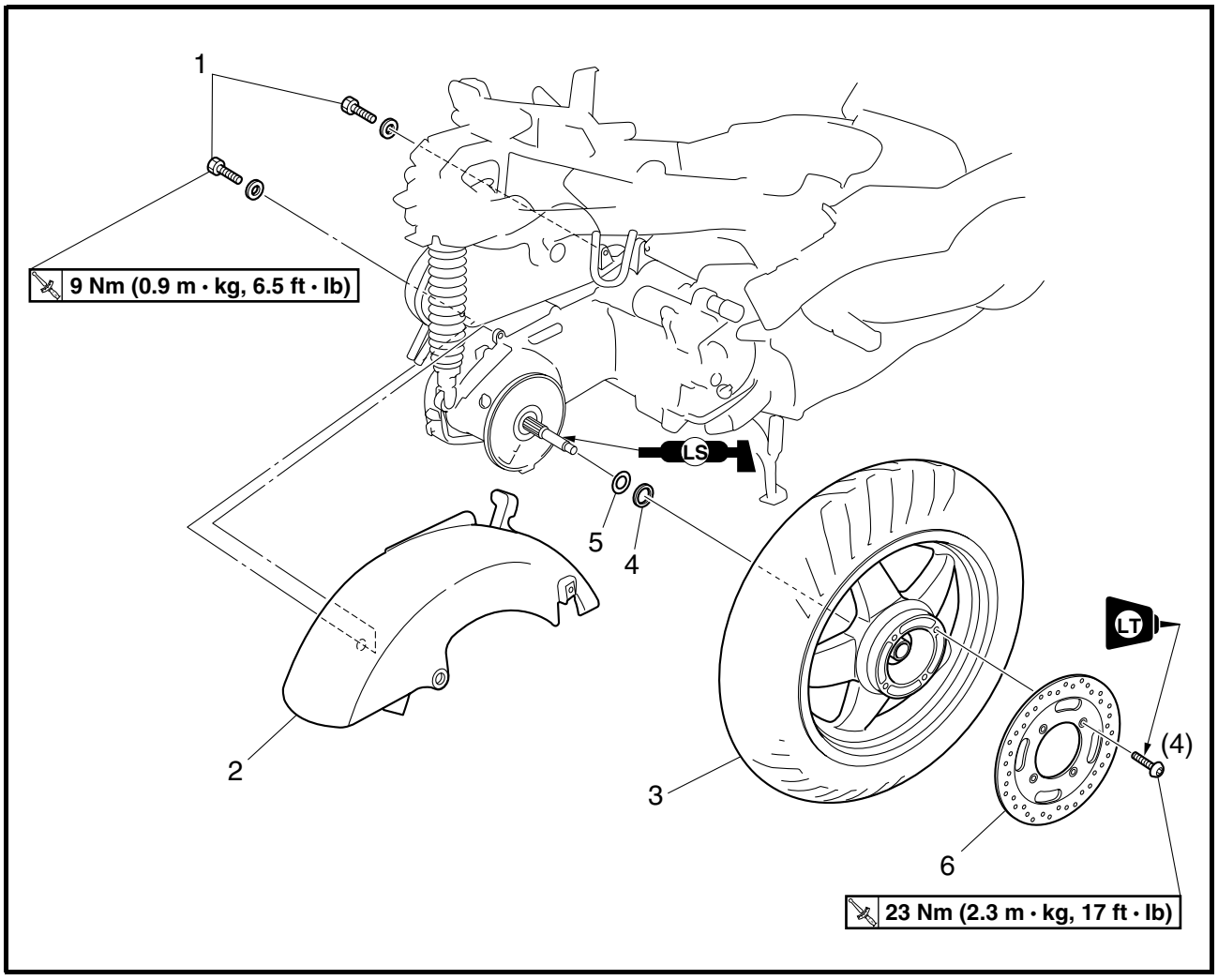
CAUTION:

Before tightening the wheel axle, push down hard on the handlebar several times and check if the front fork rebounds smoothly.

EAS05520
REAR WHEEL AND BRAKE DISC



Order	Job/Part	Q'ty	Remarks
	Removing the rear wheel and brake disc		Remove the parts in the order listed. **NOTE:** Place the vehicle on a suitable stand so that the rear wheel is elevated.
	Muffler		Refer to "ENGINE REMOVAL" in chapter 5.
	Swingarm		Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM".
1	Air filter case mounting bolt	2	Refer to "INSTALLING THE REAR WHEEL".
2	Rear fender	1	
3	Rear wheel	1	Refer to "REMOVING THE REAR WHEEL".
4	Spacer	1	



Order	Job/Part	Q'ty	Remarks
5	Washer	1	
6	Rear brake disc	1	
			For installation, reverse the removal procedure.

REMOVING THE REAR WHEEL

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

Place the vehicle on a centerstand so that the rear wheel is elevated.

2. Remove:
   - brake caliper
   - rear wheel axle nut
   - swingarm

   Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM".

NOTE:

Do not squeeze the rear brake lever when removing the rear brake caliper.

3. Remove:
   - rear wheel

EAS05650

CHECKING THE REAR WHEEL

1. Check:
   - tire
   - rear wheel

   Damage/wear → Replace.

   Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.
2. Measure:
   - radial wheel runout
   - lateral wheel runout

   Refer to "CHECKING THE FRONT WHEEL".

EAS05750
ADJUSTING THE REAR WHEEL STATIC BALANCE

NOTE:
- After replacing the tire, wheel or both, the rear wheel static balance should be adjusted.
- Adjust the rear wheel static balance with the brake disc installed.

1. Adjust:
   - rear wheel static balance
     Refer to "ADJUSTING THE FRONT WHEEL STATIC BALANCE".

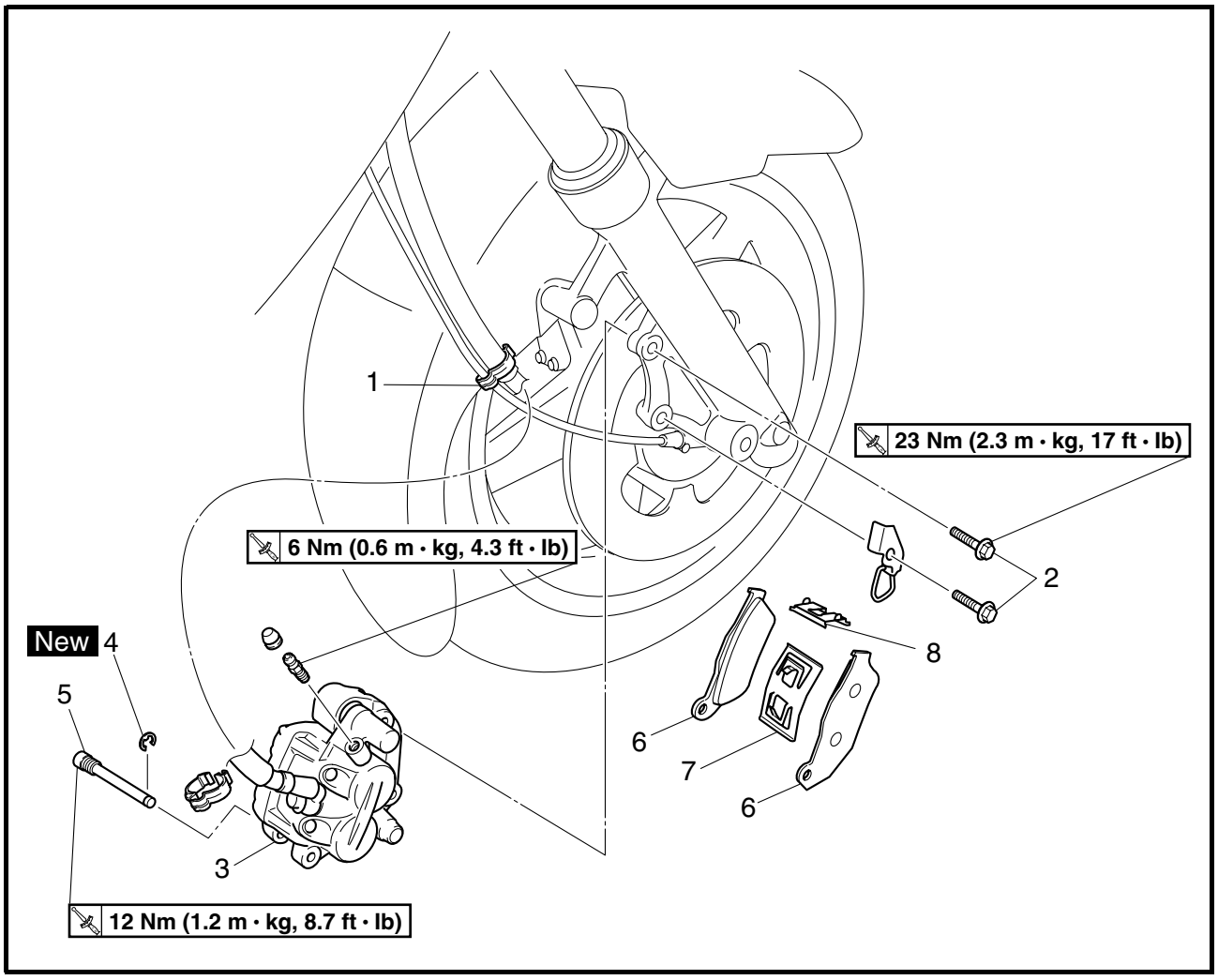
INSTALLING THE REAR WHEEL

1. Install:
   - rear fender
   - air filter case mounting bolts

9 Nm (0.9 m · kg, 6.5 ft · lb)

NOTE:
Place the rear fender between the air filter case and the crankcase, and then install the air filter case mounting bolts.

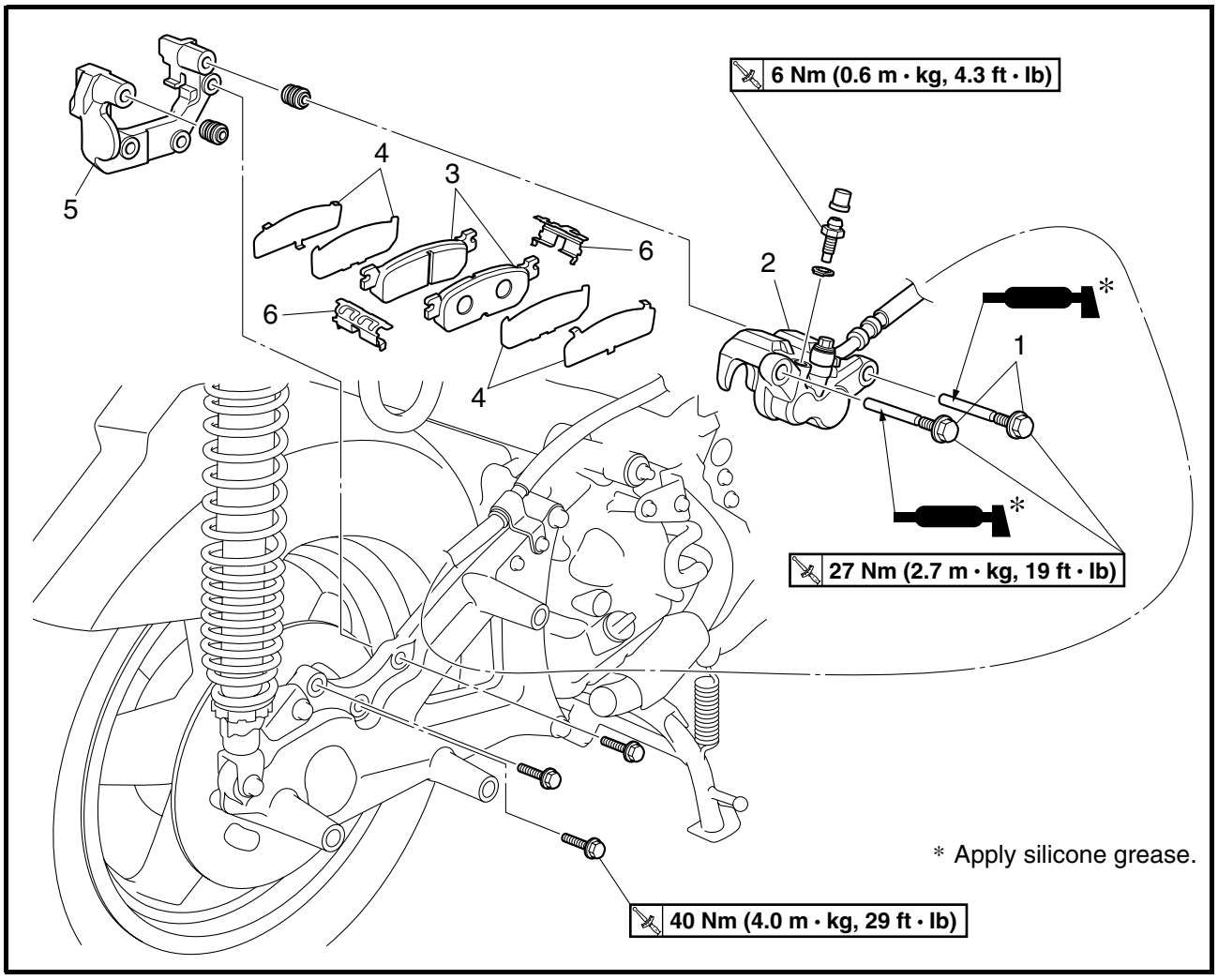
EAS05770
FRONT AND REAR BRAKES
FRONT BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake pads		Remove the parts in the order listed.
1	Holder	1	
2	Front brake caliper bolt	2	
3	Front brake caliper	1	
4	Brake pad clip	1	
5	Brake pad pin	1	Refer to "REPLACING THE FRONT BRAKE PADS".
6	Brake pad	2	
7	Brake pad spring	1	
8	Brake pad support	1	
			For installation, reverse the removal procedure.

EAS05780

REAR BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake pads		Remove the parts in the order listed.
	Muffler		Refer to "ENGINE REMOVAL" in chapter 5.
1	Rear brake caliper retaining bolt	2	
2	Rear brake caliper	1	
3	Brake pad	2	Refer to "REPLACING THE REAR BRAKE PADS".
4	Brake pad shim	4	
5	Brake caliper bracket	1	
6	Brake pad support	2	
			For installation, reverse the removal procedure.

EAS00579

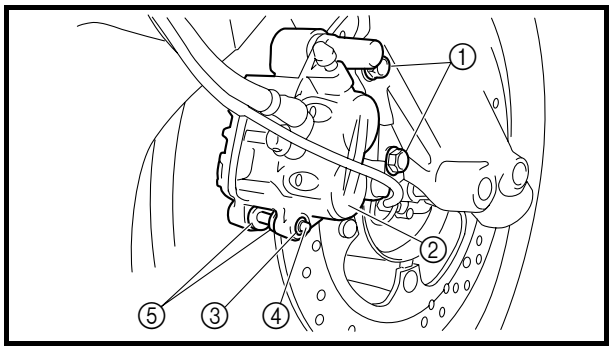
CAUTION:

Disc brake components rarely require disassembly.
Therefore, always follow these preventive measures:

- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:

- **Flush with water for 15 minutes and get immediate medical attention.**



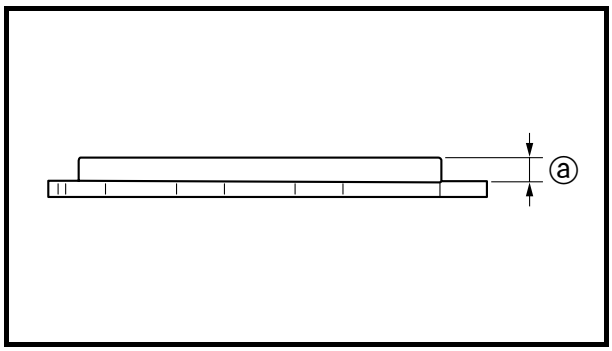
EAS05820

REPLACING THE FRONT BRAKE PADS

NOTE:

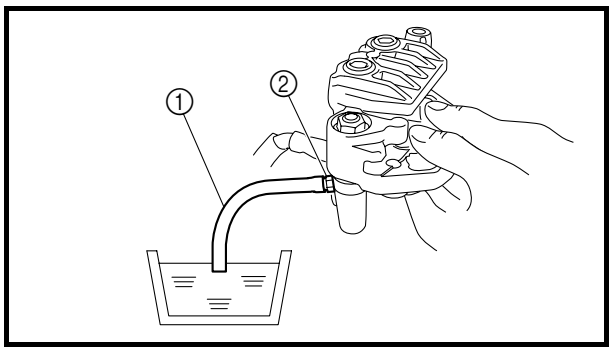
When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Remove:
   - brake caliper bolts ①
   - brake caliper ②
   - brake pad clip ③
   - brake pad pin ④
   - brake pads ⑤
   - brake pad spring
   - brake pad support



2. Measure:
   • brake pad wear limit ⓐ
   Out of specifications → Replace the brake pads as a set.

	Brake pad wear limit **0.5 mm (0.02 in)**

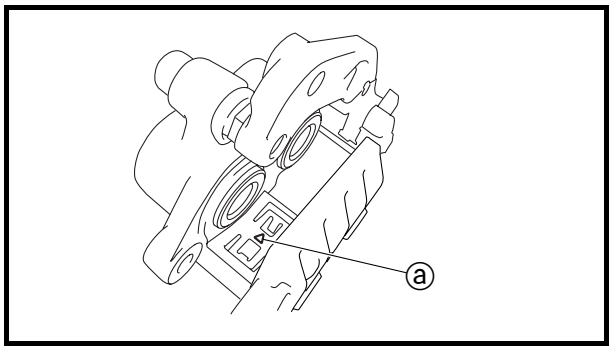


3. Install:
   • brake pad support
   • brake pad spring
   • brake pads

NOTE:
Always install new brake pads, brake pad spring, and brake pad support as a set.

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a. Connect a clear plastic hose ① tightly to the bleed screw ②. Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.
c. Tighten the bleed screw.



	Bleed screw **6 Nm (0.6 m · kg, 4.3 ft · lb)**

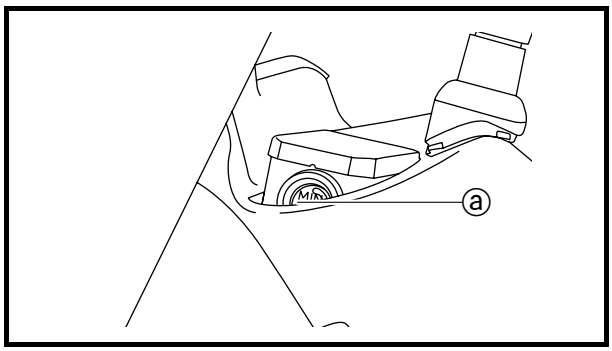
d. Install the new brake pads, new brake pad spring, and new brake pad support.

NOTE:
The arrow mark ⓐ on the brake pad spring must point in the direction of disc rotation.

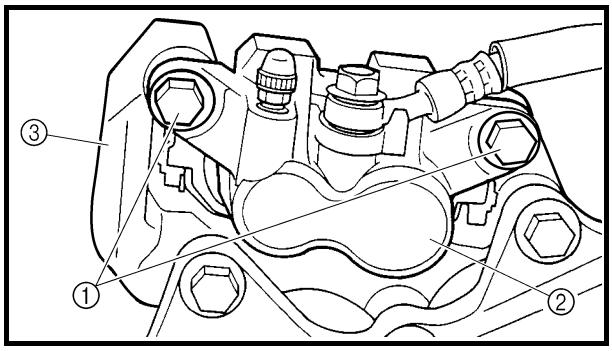
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4. Install:
   • brake caliper bolts

	23 Nm (2.3 m · kg, 17 ft · lb)



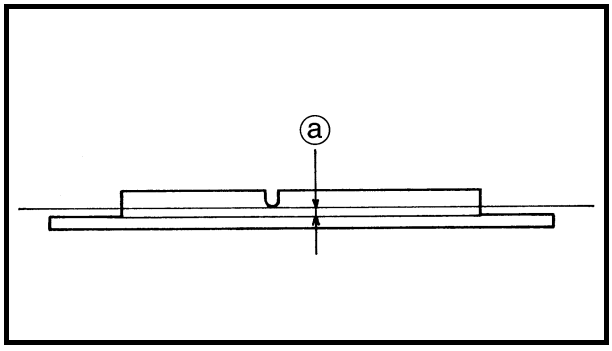
5. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
6. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.



EAS05830
REPLACING THE REAR BRAKE PADS

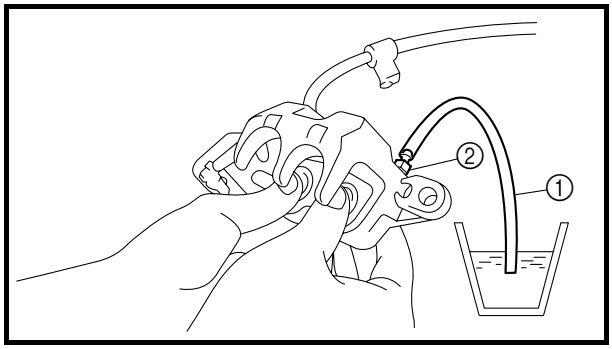
NOTE:
When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Remove:
   • brake caliper retaining bolts ①
   • brake caliper ②
   • brake pads
   (along with the brake pad shims)
   • brake caliper bracket ③
   • brake pad supports



2. Measure:
   • brake pad wear limit ⓐ
   Out of specification → Replace the brake pads as a set.

	Brake pad wear limit **0.8 mm (0.03 in)**



3. Install:
   • brake pad supports
   • brake pads
   (along with the brake pad shims)

NOTE:
Always install new brake pads, brake pad shims, and a brake pad supports as a set.

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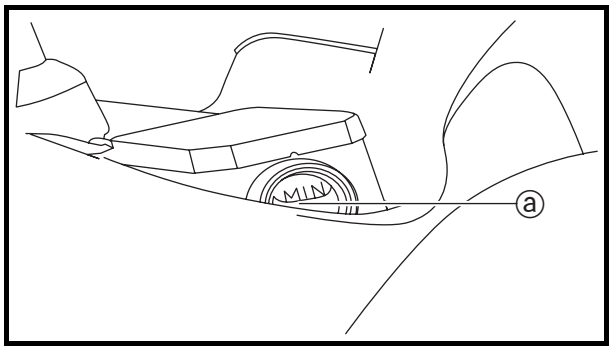
a. Connect a clear plastic hose ① tightly to the bleed screw ②. Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.
c. Tighten the bleed screw.

	Bleed screw **6 Nm (0.6 m · kg, 4.3 ft · lb)**

d. Install new brake pad shims onto each new brake pads.
e. Install new brake pad supports and new brake pads.

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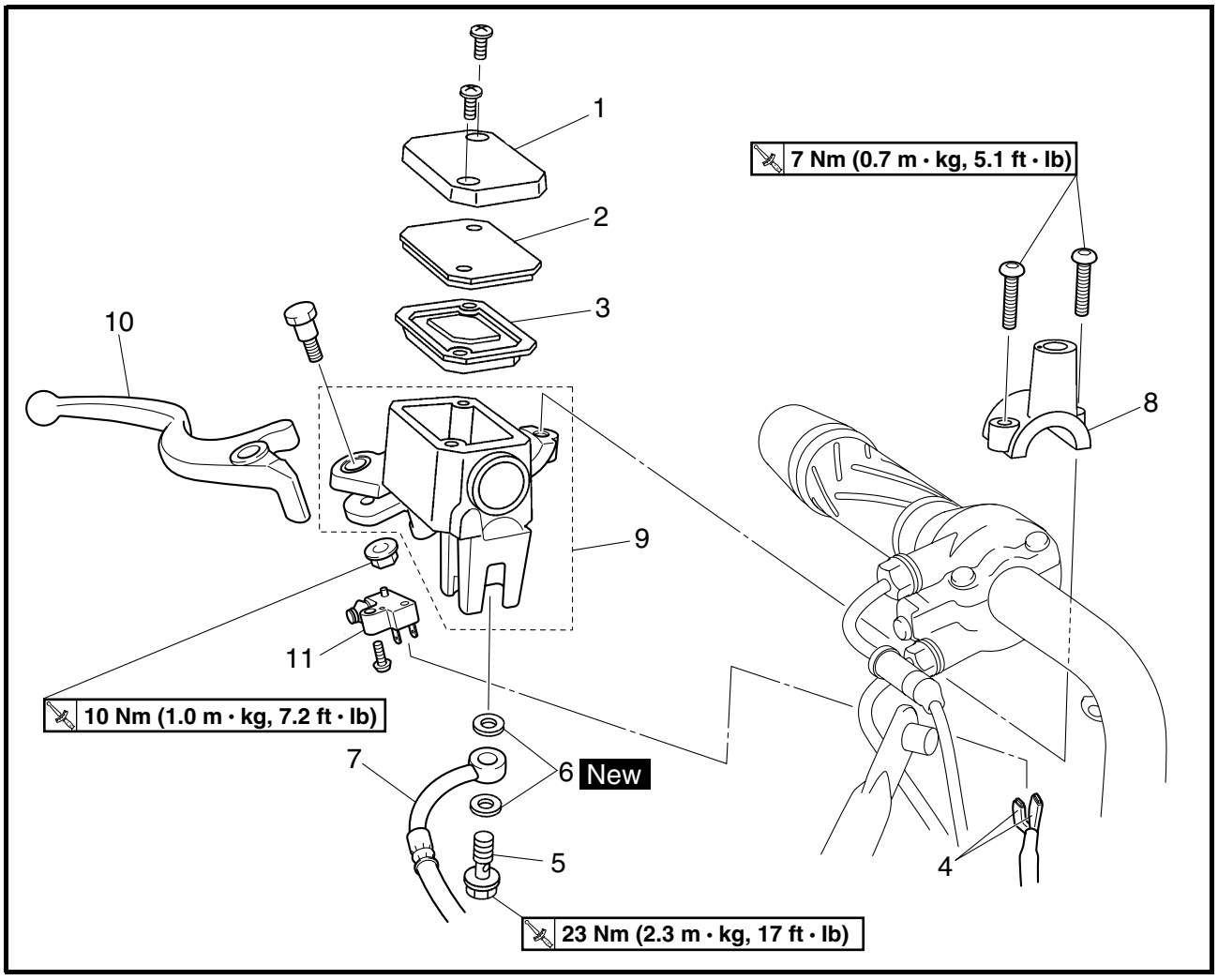
4. Install:
   • brake caliper bolts
   40 Nm (4.0 m · kg, 29 ft · lb)
   • brake caliper retaining bolts
   27 Nm (2.7 m · kg, 19 ft · lb)



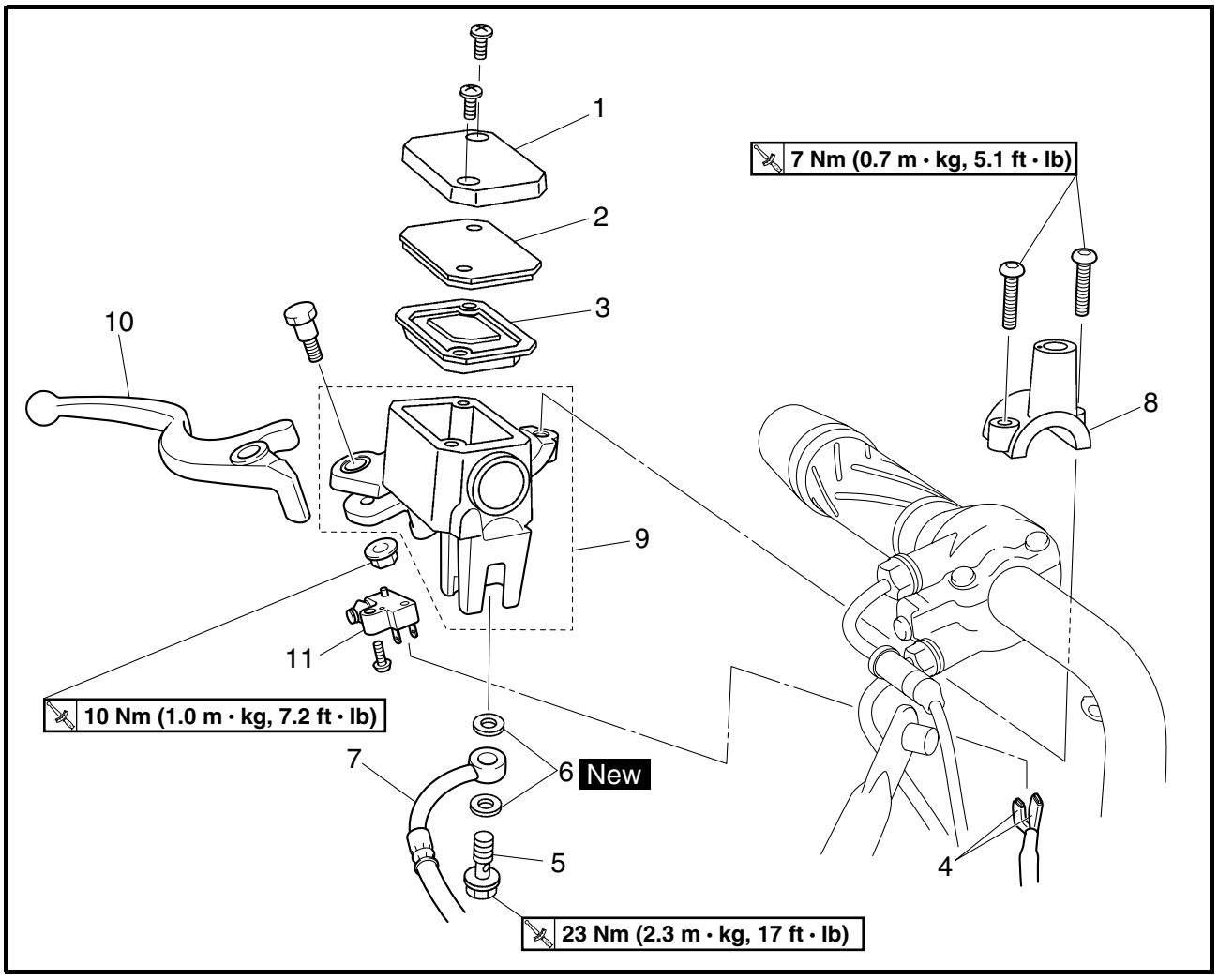
5. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
6. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS05840

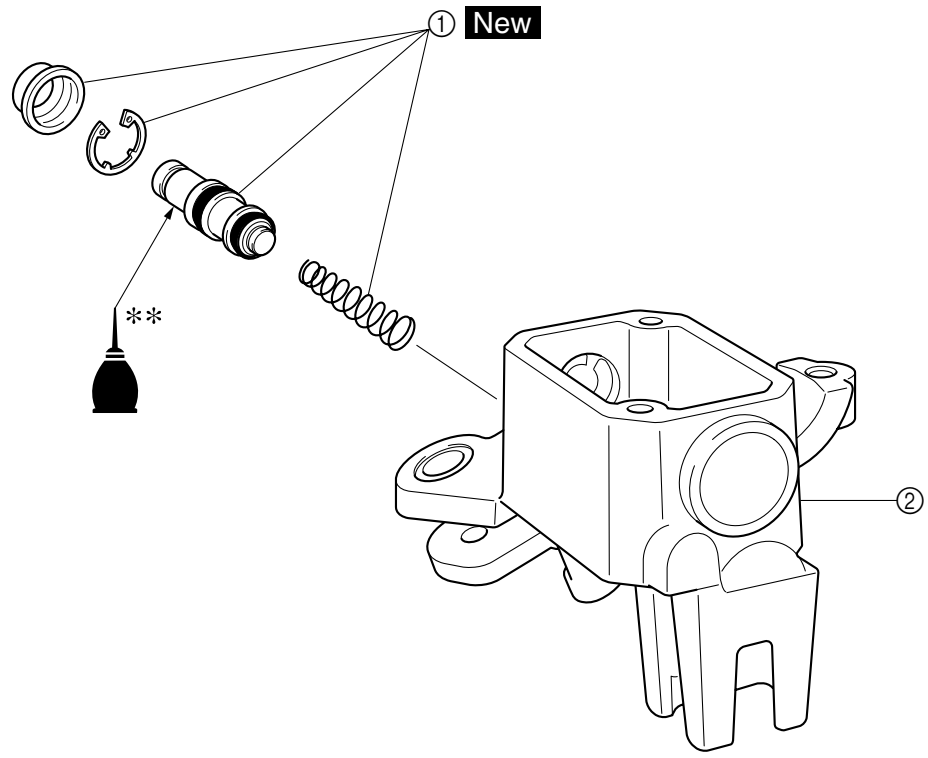
FRONT BRAKE MASTER CYLINDER



Order	Job/Part	Q'ty	Remarks
	Removing the front brake master cylinder		Remove the parts in the order listed.
	Handlebar lower cover		Refer to "COVERS AND PANELS" in chapter 3.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Brake master cylinder reservoir cap	1	
2	Brake master cylinder reservoir diaphragm holder	1	
3	Brake master cylinder reservoir diaphragm	1	
4	Front brake light switch connector	2	Disconnect.



Order	Job/Part	Q'ty	Remarks
5	Brake hose union bolt	1	Refer to "DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER".
6	Copper washer	2	
7	Front brake hose	1	
8	Front brake master cylinder holder	1	Refer to "ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER".
9	Brake master cylinder assembly	1	
10	Front brake lever	1	
11	Front brake light switch	1	
			For installation, reverse the removal procedure.

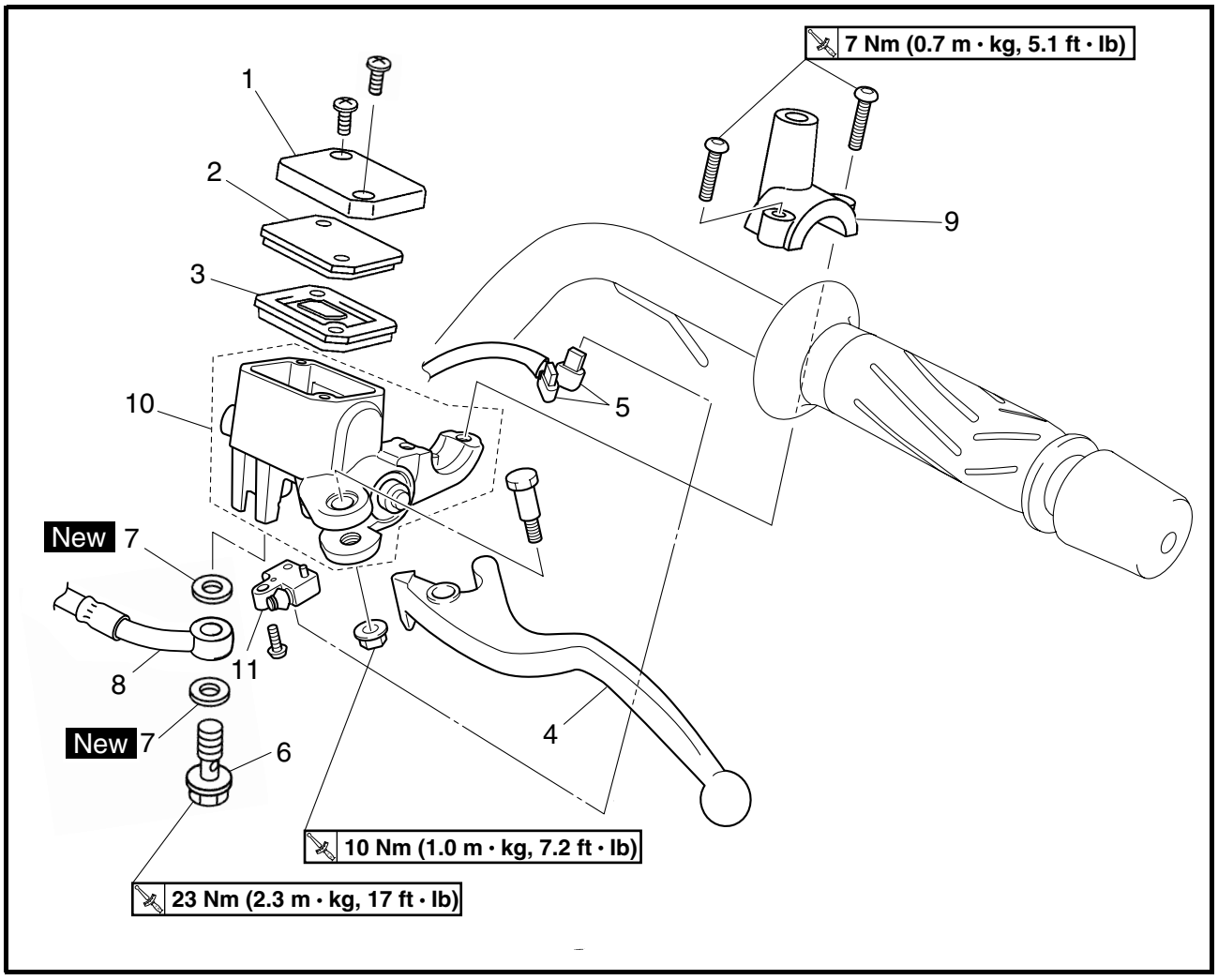


** Apply brake fluid

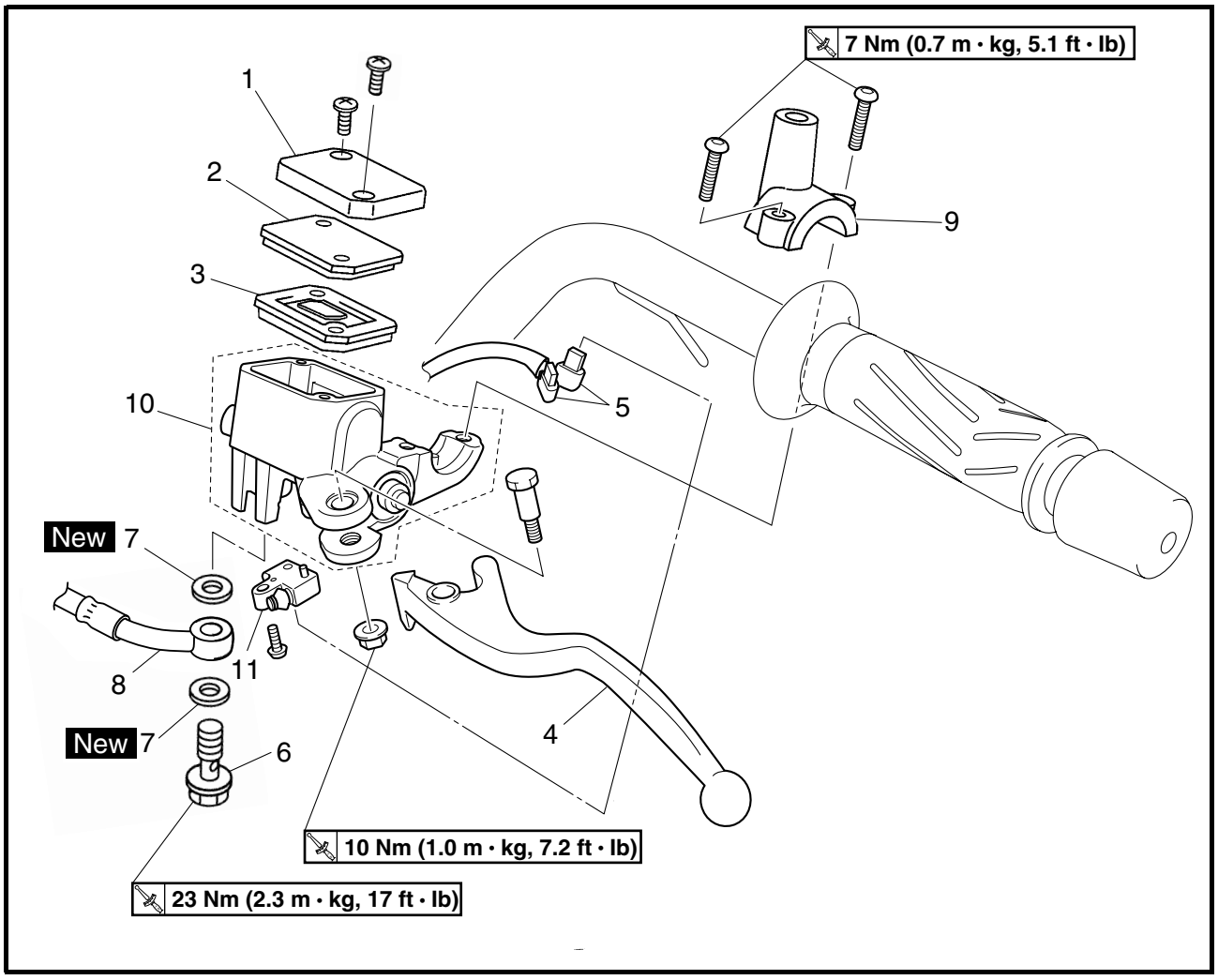
Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake master cylinder		Remove the parts in the order listed.
①	Brake master cylinder kit	1	Refer to "ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER".
②	Brake master cylinder body	1	For assembly, reverse the disassembly procedure.

EAS05860

REAR BRAKE MASTER CYLINDER

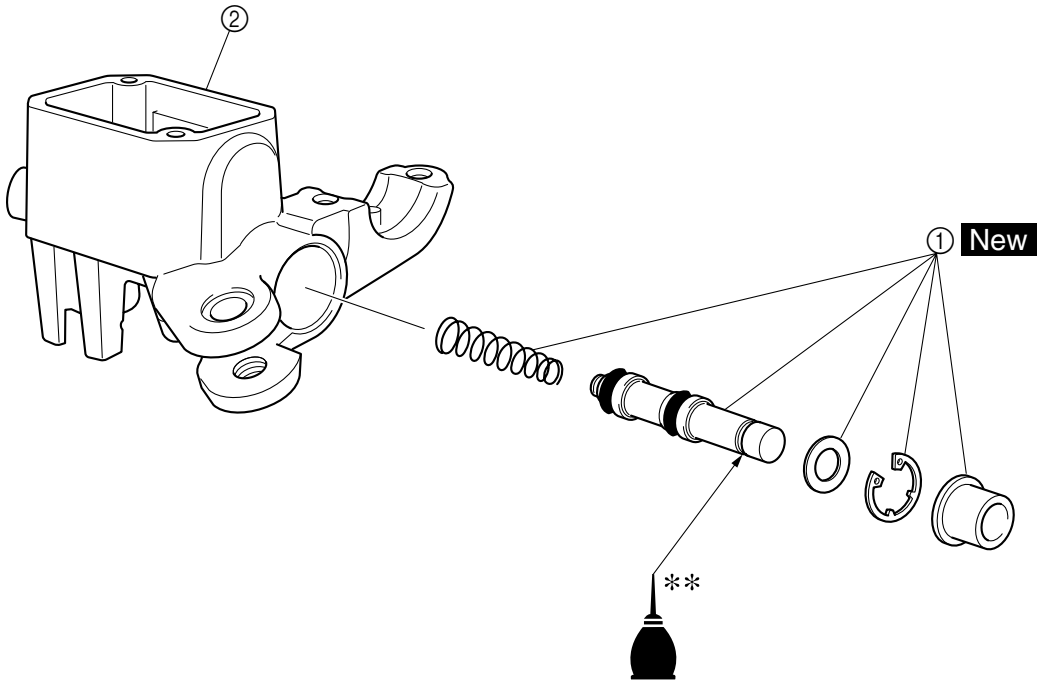


Order	Job/Part	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order listed.
	Handlebar lower cover		Refer to "COVERS AND PANELS" in chapter 3.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Brake master cylinder reservoir cap	1	
2	Brake master cylinder reservoir diaphragm holder	1	
3	Brake master cylinder reservoir diaphragm	1	
4	Rear brake lever	1	



Order	Job/Part	Q'ty	Remarks
5	Rear brake light switch connector	2	Disconnect.
6	Brake hose union bolt	1	Refer to "DISASSEMBLING THE REAR BRAKE MASTER CYLINDER" and "ASSEMBLING AND INSTALLING THE REAR BRAKE MASTER CYLINDER".
7	Copper washer	2	
8	Rear brake hose	1	
9	Rear brake master cylinder holder	1	Refer to "ASSEMBLING AND INSTALLING THE REAR BRAKE MASTER CYLINDER".
10	Brake master cylinder assembly	1	
11	Rear brake light switch	1	For installation, reverse the removal procedure.

EAS05870

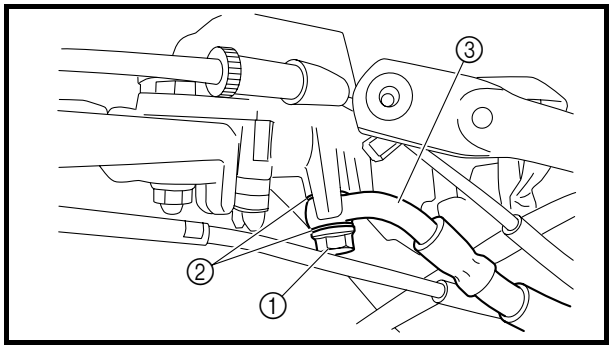


** Apply brake fluid

Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake master cylinder		Remove the parts in the order listed.
①	Brake master cylinder kit	1	Refer to "ASSEMBLING AND INSTALLING THE REAR BRAKE MASTER CYLINDER".
②	Brake master cylinder body	1	For assembly, reverse the disassembly procedure.

EAS05880
DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER

NOTE:
Before disassembling the front brake master cylinder, drain the brake fluid from the entire brake system.

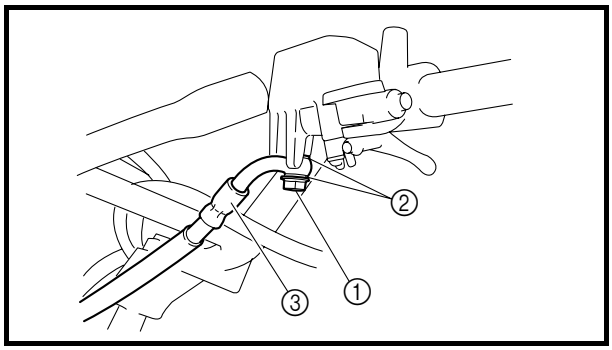


1. Remove:
   - brake hose union bolt ①
   - copper washers ②
   - brake hose ③

NOTE:
To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

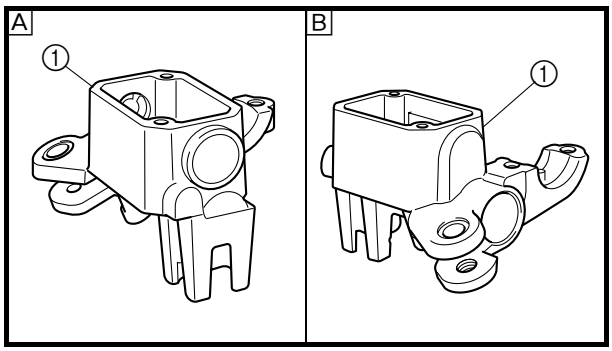
EAS05890
DISASSEMBLING THE REAR BRAKE MASTER CYLINDER

NOTE:
Before disassembling the rear brake master cylinder, drain the brake fluid from the entire brake system.



1. Remove:
   - brake hose union bolt ①
   - copper washers ②
   - brake hose ③

NOTE:
To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

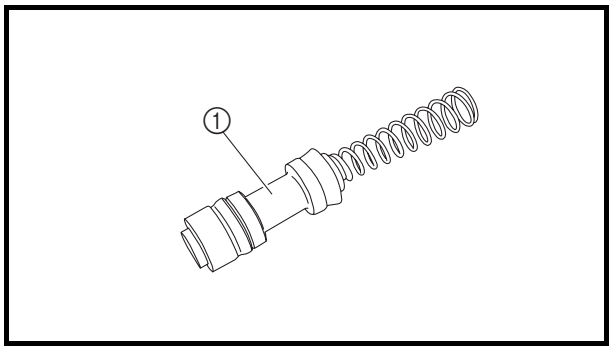


EAS05920
CHECKING THE FRONT AND REAR BRAKE MASTER CYLINDERS

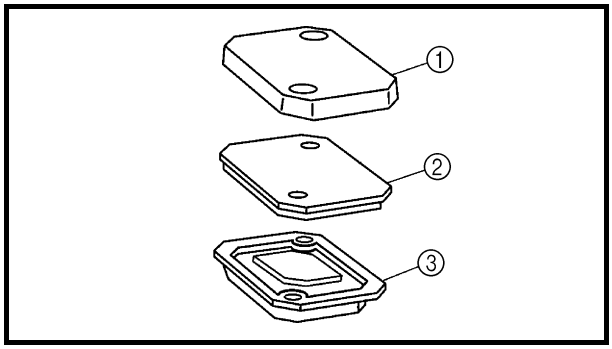
The following procedure applies to both of the brake master cylinders.

1. Check:
   - brake master cylinder ①
     Damage/scratches/wear → Replace.
   - brake fluid delivery passages (brake master cylinder body)
     Obstruction → Blow out with compressed air.

A Front
B Rear



2. Check:
   - brake master cylinder kit ①
     Damage/scratches/wear → Replace.



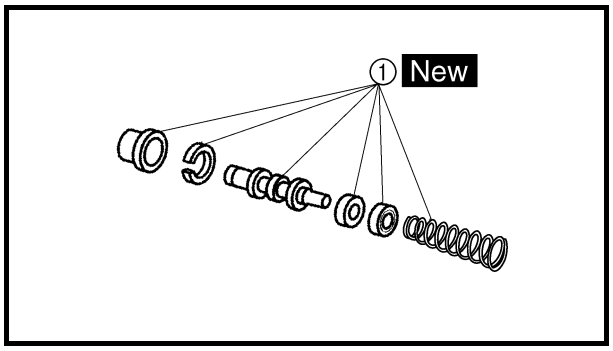
3. Check:
   - brake master cylinder reservoir cap ①
     Cracks/damage → Replace.
   - brake master cylinder reservoir diaphragm holder ②
   - brake master cylinder diaphragm ③
     Damage/wear → Replace.
4. Check:
   - brake hoses
     Cracks/damage/wear → Replace.

EAS06000
ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER

⚠ WARNING

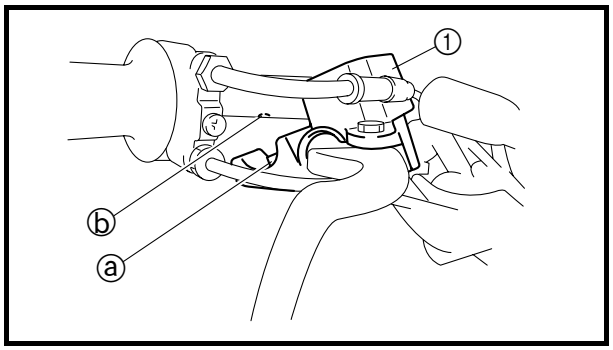
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**

Recommended brake fluid
DOT 4



1. Install:
   - brake master cylinder kit ① New

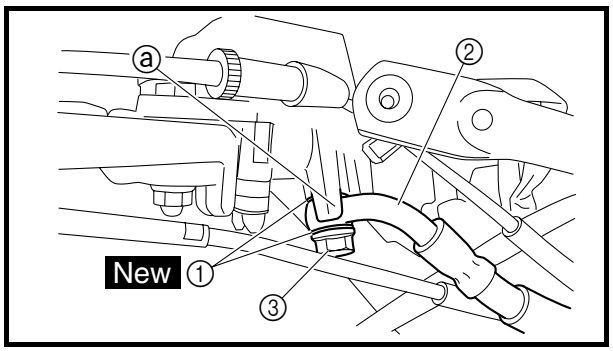
NOTE:
Install the spring with its smaller diameter end towards the circlip and dust boot.



2. Install:
   - brake master cylinder ①
   - brake master cylinder holder

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:
- Align the projection ⓐ on the brake master cylinder with the hole ⓑ in the handlebar.
- First tighten the front bolt, then the rear bolt.



3. Install:
   - copper washers ① New
   - brake hose ②
   - brake hose union bolt ③

23 Nm (2.3 m · kg, 17 ft · lb)

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake master cylinder, make sure the brake pipe touches the projection ⓐ on the brake master cylinder.

NOTE:

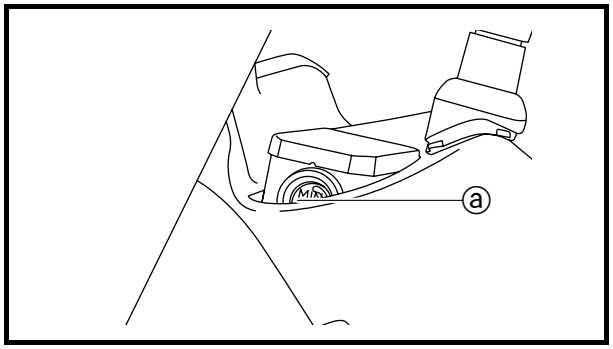
Turn the handlebar to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

4. Fill:
   - brake master cylinder reservoir
     (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**



CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

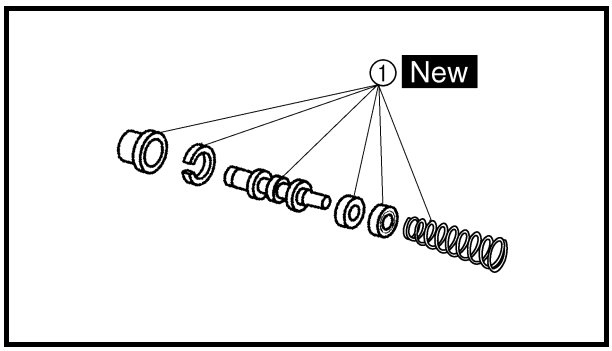
5. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
6. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
7. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS06001
ASSEMBLING AND INSTALLING THE REAR BRAKE MASTER CYLINDER

⚠ WARNING

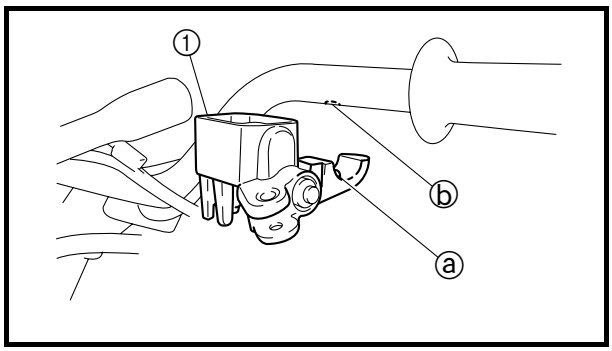
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**

Recommended brake fluid
DOT 4



1. Install:
   • brake master cylinder kit ① New

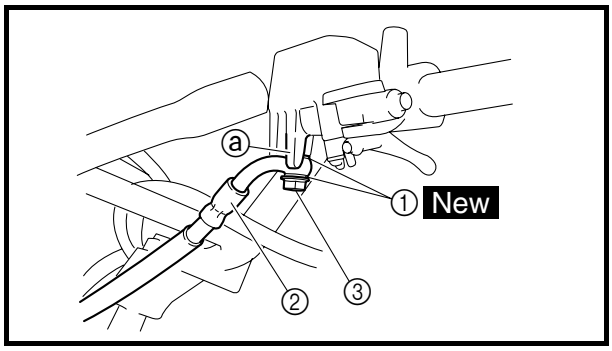
NOTE:
Install the spring with its smaller diameter end towards the circlip and dust boot.



2. Install:
   • brake master cylinder ①
   • brake master cylinder holder

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:
- Align the projection ⓐ on the brake master cylinder with the hole ⓑ in the handlebar.
- First tighten the front bolt, then the rear bolt.



3. Install:
   • copper washers ① New
   • brake hose ②
   • brake hose union bolt ③

23 Nm (2.3 m · kg, 17 ft · lb)

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake master cylinder, make sure the brake pipe touches the projection ⓐ on the brake master cylinder.

NOTE:
Turn the handlebar to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

4. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

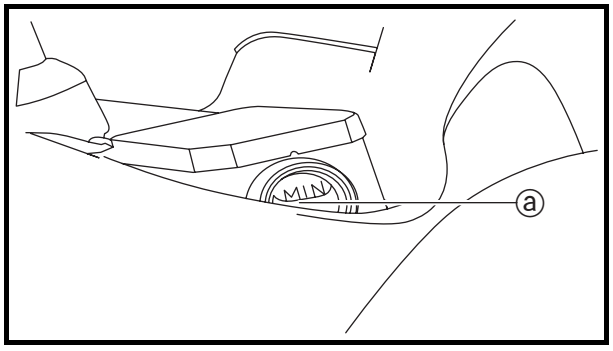
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

5. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

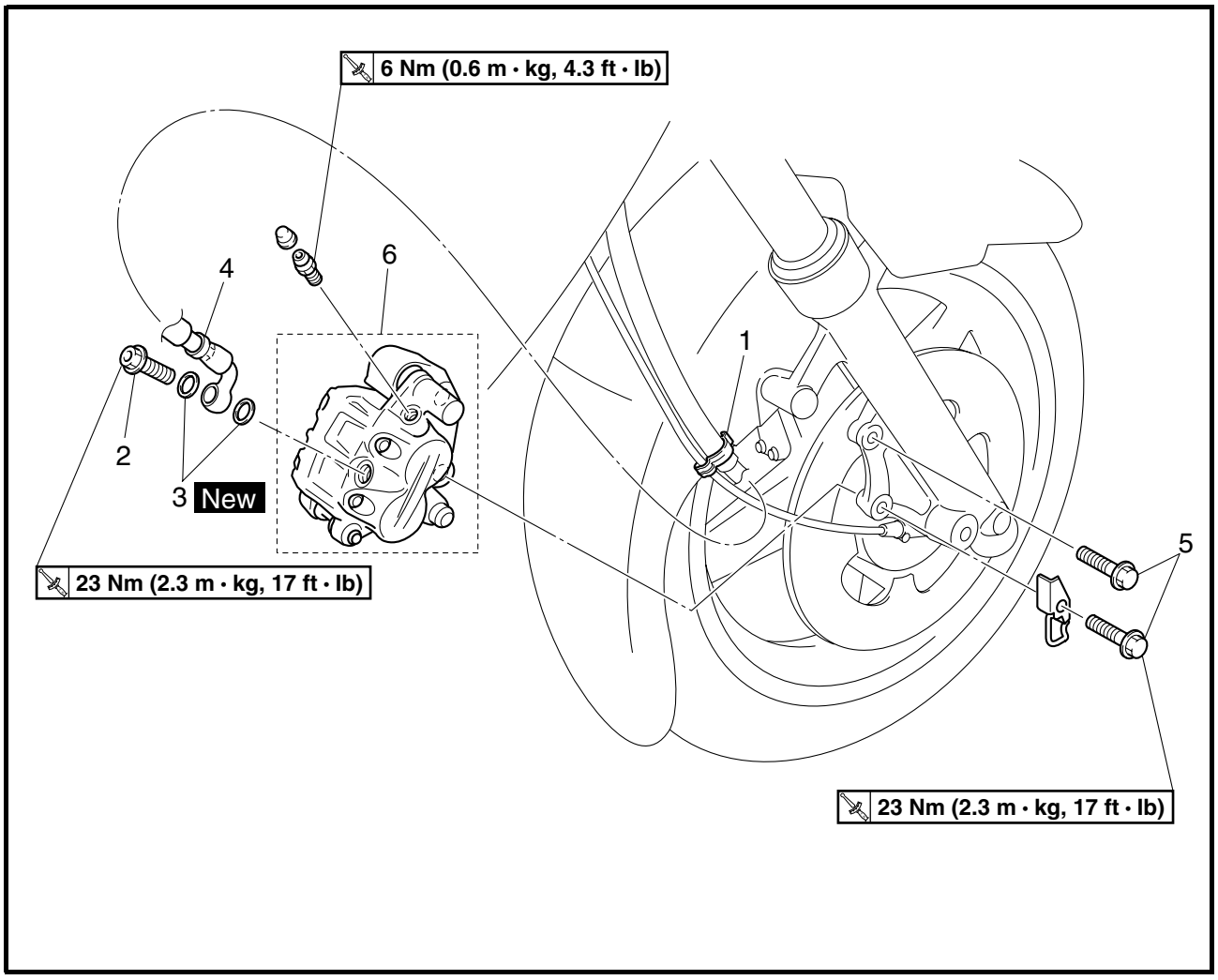


6. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

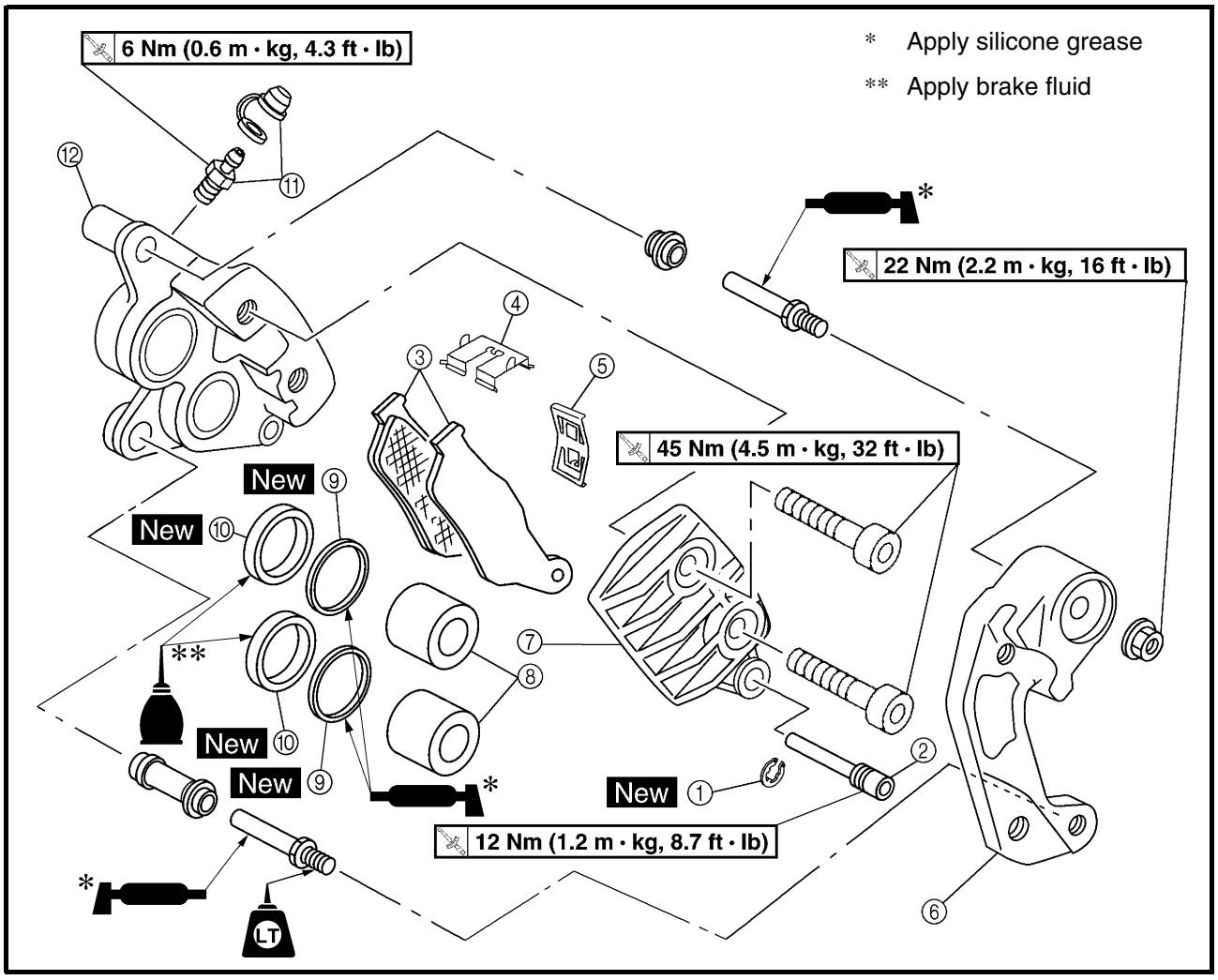
7. Check:
   - brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS06120

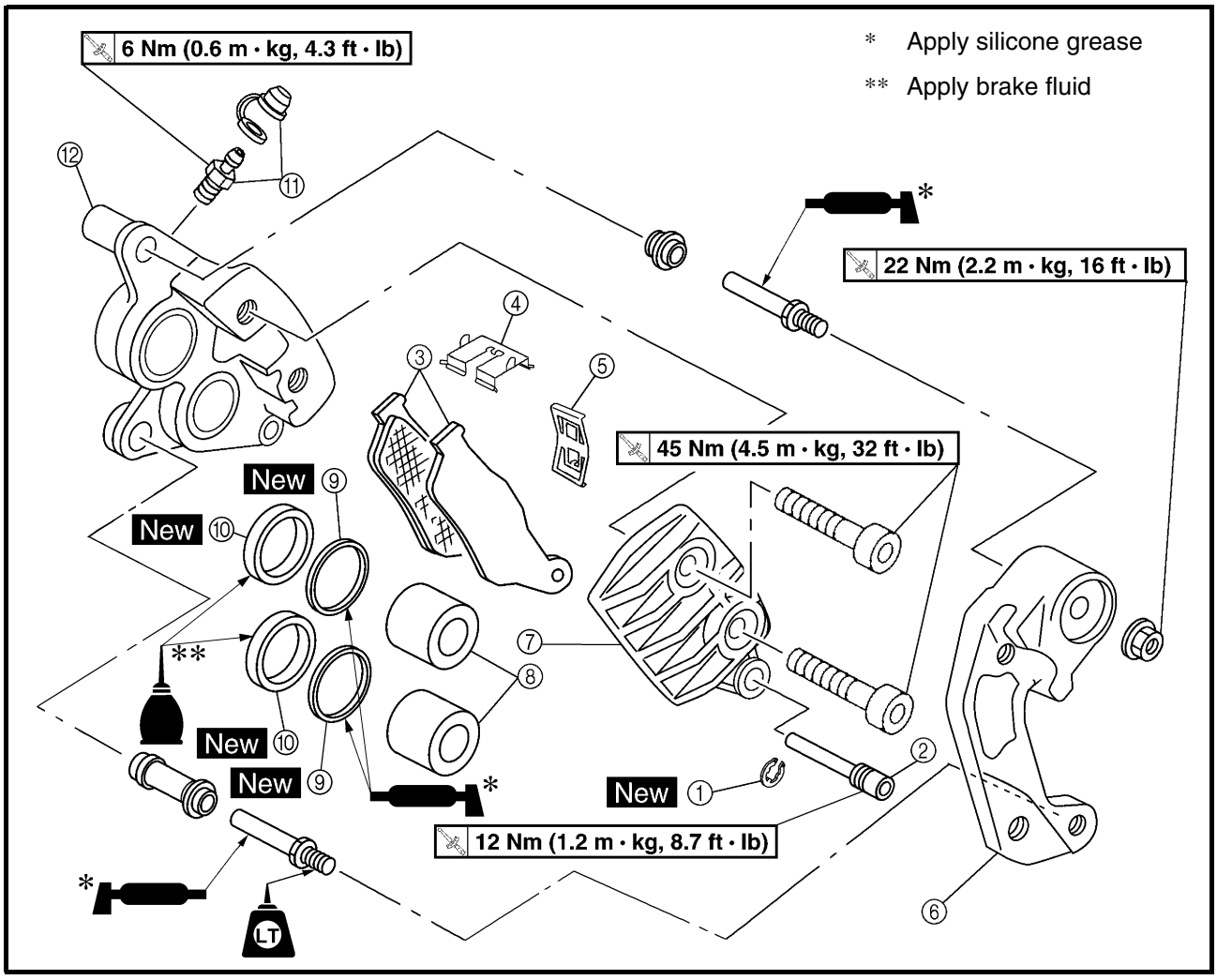
FRONT BRAKE CALIPER



Order	Job/Part	Q'ty	Remarks
	Removing the front brake caliper		Remove the parts in the order listed.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Holder	1	
2	Brake hose union bolt	1	Refer to "DISASSEMBLING THE FRONT BRAKE CALIPER" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER".
3	Copper washer	2	
4	Front brake hose	1	
5	Front brake caliper bolt	2	
6	Front brake caliper	1	
			For installation, reverse the removal procedure.



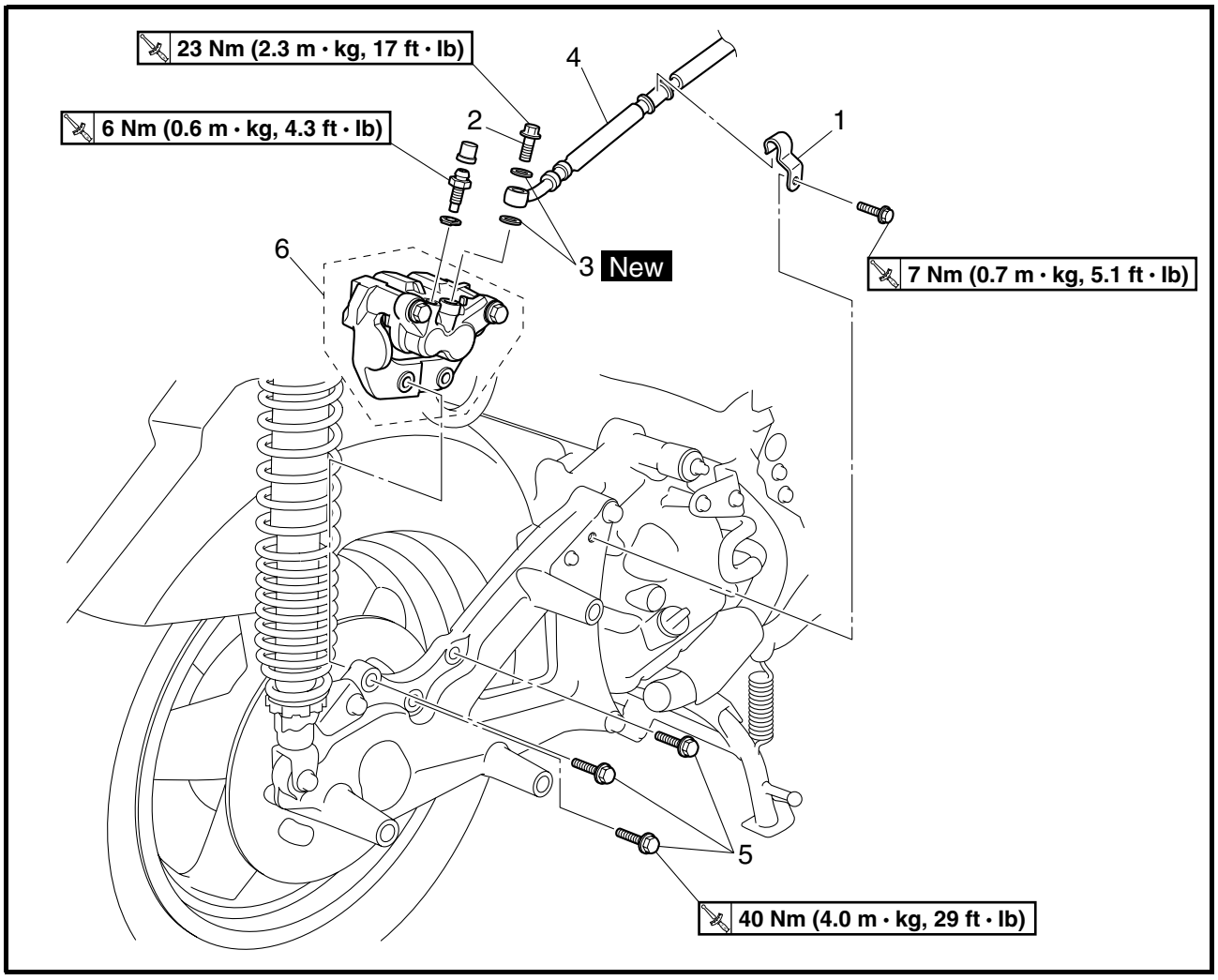
Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake caliper		Remove the parts in the order listed.
①	Brake pad clip	1	
②	Brake pad pin	1	
③	Brake pad	2	Refer to "ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER".
④	Brake pad support	1	
⑤	Brake pad spring	1	
⑥	Brake caliper bracket	1	Refer to "DISASSEMBLING THE FRONT BRAKE CALIPER" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER".
⑦	Brake caliper housing	1	
⑧	Brake caliper piston	2	
⑨	Brake caliper dust seal	2	
⑩	Brake caliper piston seal	2	



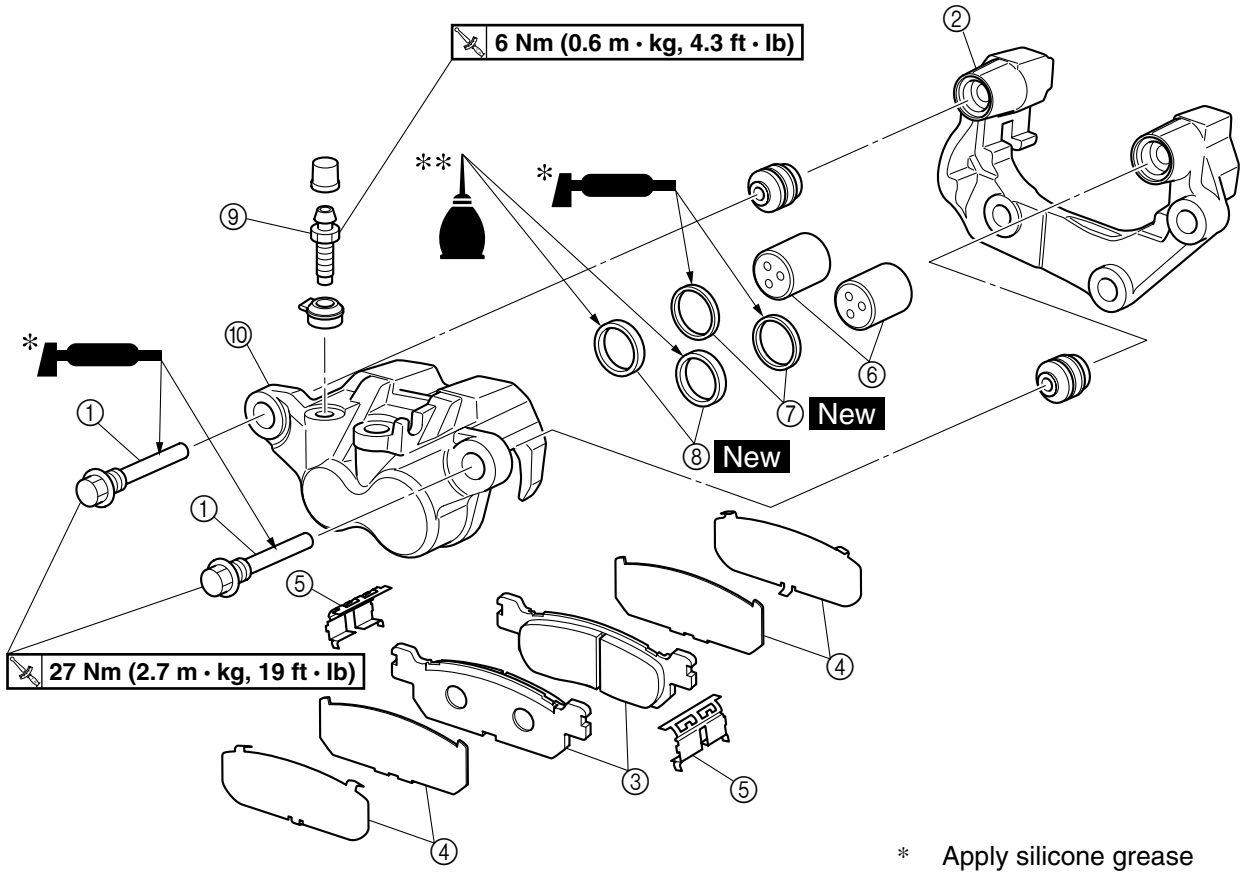
Order	Job/Part	Q'ty	Remarks
⑪	Bleed screw/cap	1/1	
⑫	Brake caliper body	1	
			For assembly, reverse the disassembly procedure.

EAS06160

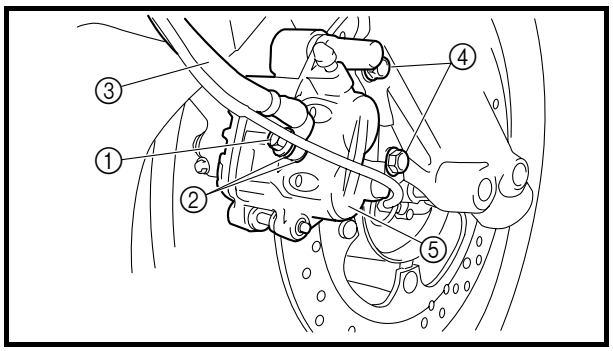
REAR BRAKE CALIPER



Order	Job/Part	Q'ty	Remarks
	Removing the rear brake caliper		Remove the parts in the order listed.
	Muffler		Refer to "ENGINE REMOVAL" in chapter5.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
1	Brake hose holder	1	Refer to "DISASSEMBLING THE REAR BRAKE CALIPER" and "ASSEMBLING AND INSTALLING THE REAR BRAKE CALIPER".
2	Brake hose union bolt	1	
3	Copper washer	2	
4	Rear brake hose	1	
5	Rear brake caliper bolt	3	
6	Rear brake caliper	1	
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake caliper		Remove the parts in the order listed.
①	Rear brake caliper retaining bolt	2	
②	Brake caliper bracket	1	
③	Brake pad	2	Refer to "ASSEMBLING AND INSTALLING THE REAR BRAKE CALIPER".
④	Brake pad shim	4	
⑤	Brake pad support	2	
⑥	Brake caliper piston	2	
⑦	Brake caliper dust seal	2	Refer to "DISASSEMBLING THE REAR BRAKE CALIPER" and "ASSEMBLING AND INSTALLING THE REAR BRAKE CALIPER".
⑧	Brake caliper piston seal	2	
⑨	Bleed screw/cap	1/1	
⑩	Brake caliper body	1	
			For assembly, reverse the disassembly procedure.

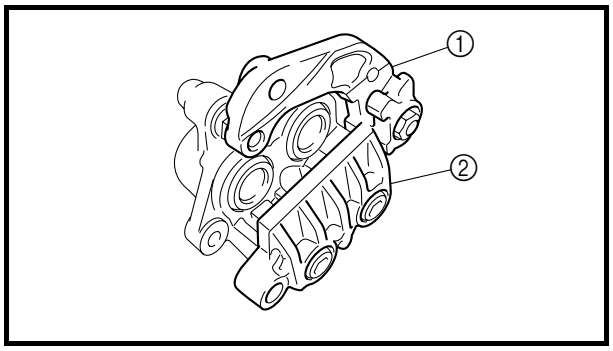


EAS06190
DISASSEMBLING THE FRONT BRAKE CALIPER

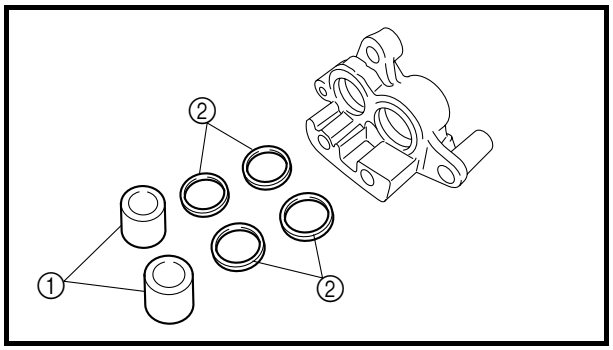
NOTE:
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

1. Remove:
   - brake hose union bolt ①
   - copper washers ②
   - brake hose ③
   - brake caliper bolts ④
   - brake caliper ⑤

NOTE:
Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:
   - brake caliper bracket ①
   - brake caliper housing ②



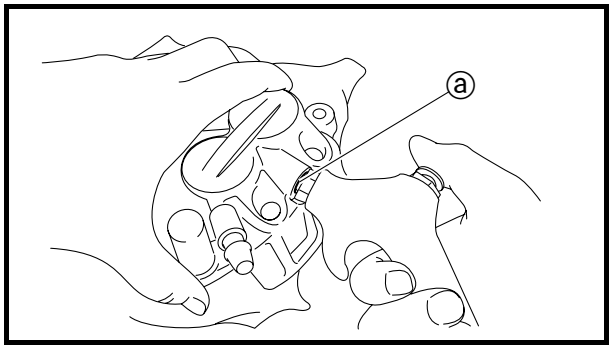
3. Remove:
   - brake caliper pistons ①
   - brake caliper dust seals and piston seals ②

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a. Blow compressed air into the brake hose joint opening ⓐ to force out the pistons from the brake caliper.

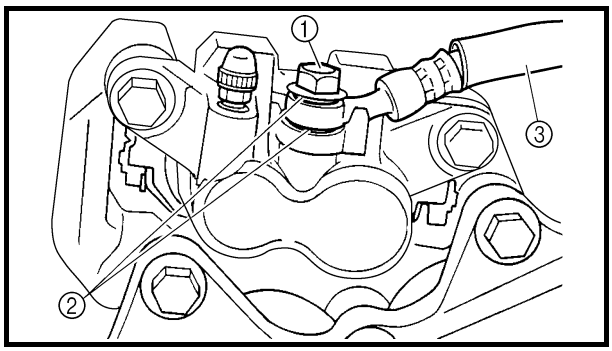
⚠ WARNING

- **Cover the brake caliper pistons with a rag. Be careful not to get injured when the pistons are expelled from the brake caliper.**
- **Never try to pry out the brake caliper pistons.**



b. Remove the brake caliper dust seals and piston seals.

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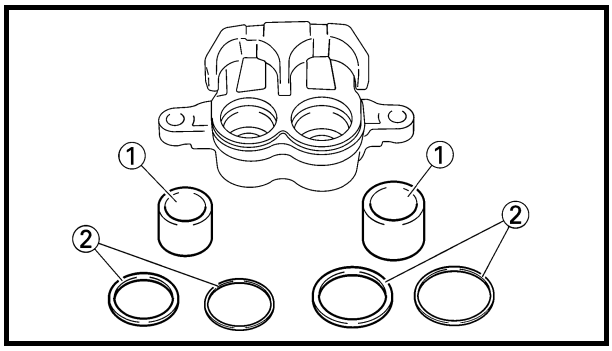


EAS00627
DISASSEMBLING THE REAR BRAKE CALIPER

NOTE:
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

1. Remove:
   - brake hose union bolt ①
   - copper washers ②
   - brake hose ③
   - brake caliper retaining bolts
   - brake caliper

NOTE:
Put the end of the brake hose into a container and pump out the brake fluid carefully.



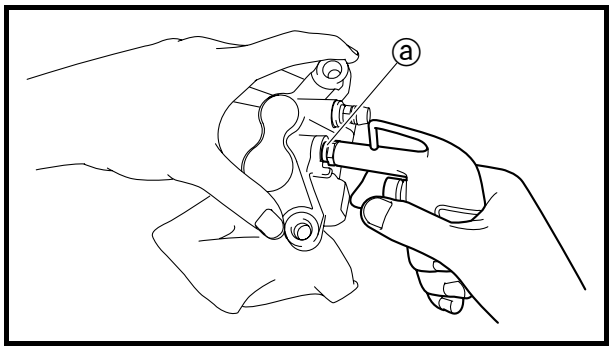
2. Remove:
   - brake caliper pistons ①
   - brake caliper dust seals and piston seals ②

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a. Blow compressed air into the brake hose joint opening ⓐ to force out the pistons from the brake caliper.

⚠ WARNING

- **Cover the brake caliper pistons with a rag. Be careful not to get injured when the pistons are expelled from the brake caliper.**
- **Never try to pry out the brake caliper pistons.**



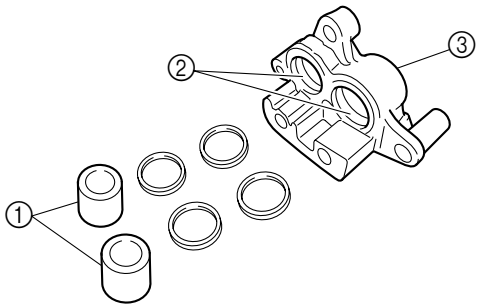
b. Remove the brake caliper dust seals and piston seals.

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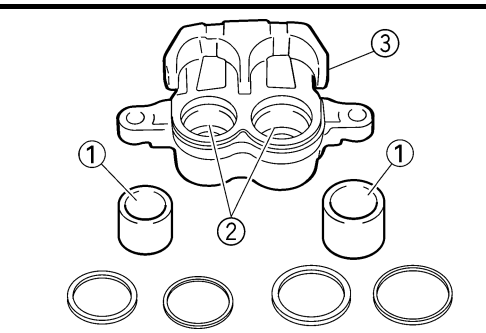
EAS06330
CHECKING THE FRONT AND REAR BRAKE CALIPERS

Recommended brake component replacement schedule	
Brake pads	**If necessary**
Dust seals, Piston seals	**Every two years**
Brake hose	**Every four years**
Brake fluid	**Every two years and whenever the brake is disassembled**

A



B



1. Check:
   - brake caliper pistons ①
     Rust/scratches/wear → Replace the brake caliper pistons.
   - brake caliper cylinders ②
     Scratches/wear → Replace the brake caliper assembly.
   - brake caliper body ③
     Cracks/damage → Replace the brake caliper assembly.
   - brake fluid delivery passages (brake caliper body)
     Obstruction → Blow out with compressed air.

⚠ WARNING

Whenever a brake caliper is disassembled, replace the brake caliper piston seals.

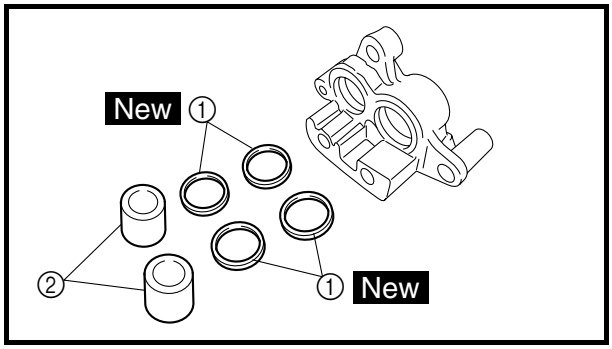
A Front
B Rear

2. Check:
   - brake caliper bracket
     Cracks/damage → Replace.

EAS06350
ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER

⚠ WARNING

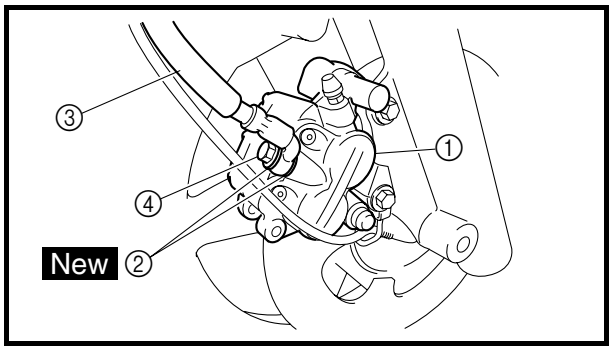
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper dust seals and piston seals.**



Recommended brake fluid
DOT 4

1. Install:
   - brake caliper dust seals and piston seals ① New
   - brake calliper pistons ②
2. Install:
   - brake caliper housing

     45 Nm (4.5 m · kg, 32 ft · lb)
   - brake caliper bracket

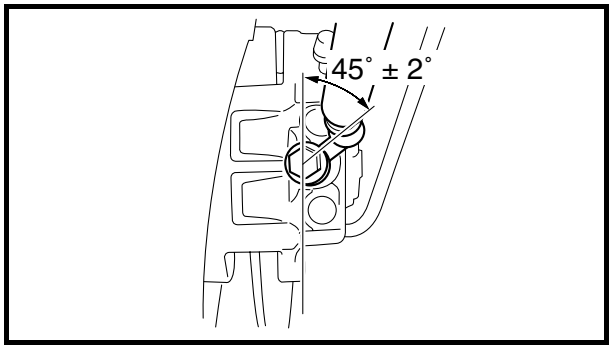


3. Install:
   - brake caliper ① (temporarily)
   - copper washers ② New
   - brake hose ③
   - brake hose union bolt ④

     23 Nm (2.3 m · kg, 17 ft · lb)

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.



CAUTION:

While holding the brake hose, tighten the union bolt within the range shown in the illustration.

4. Remove:
   • brake caliper
5. Install:
   • brake pad support
   • brake pad spring
   • brake pads
   Refer to “REPLACING THE FRONT BRAKE PADS”.
6. Install:
   • brake caliper
   • brake caliper bolts

23 Nm (2.3 m · kg, 17 ft · lb)

7. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

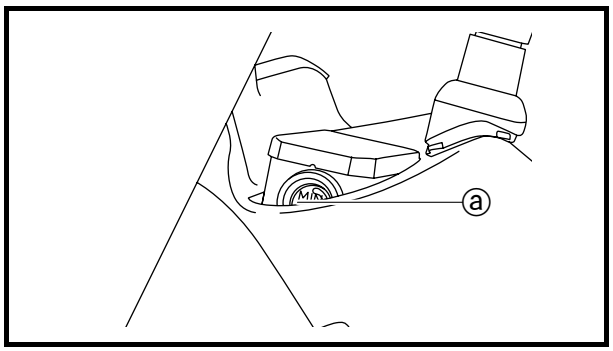
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

8. Bleed:
   • brake system
   Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.

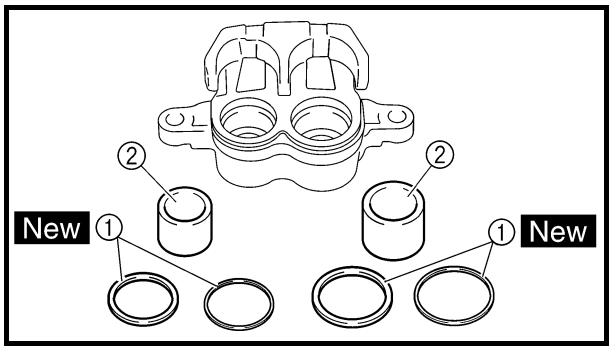


9. Check:
   • brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
10. Check:
   • brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EAS06351
ASSEMBLING AND INSTALLING THE REAR BRAKE CALIPER

⚠ WARNING

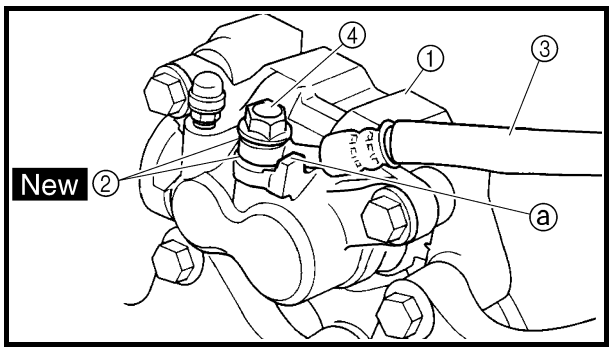
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**
- **Whenever a brake caliper is disassembled, replace the brake caliper dust seals and piston seals.**



Recommended brake fluid
DOT 4

1. Install:
   • brake caliper dust seals and piston seals ① New
   • brake calliper pistons ②
2. Install:
   • brake pad supports
   • brake caliper bracket

40 Nm (4.0 m · kg, 29 ft · lb)



3. Install:
   - brake caliper ①
     (temporarily)
   - copper washers ② New
   - brake hose ③
   - brake hose union bolt ④

23 Nm (2.3 m · kg, 17 ft · lb)

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake caliper, make sure the brake pipe touches the projection ⓐ on the brake caliper.

4. Remove:
   - brake caliper
5. Install:
   - brake pad shims
   - brake pads
     Refer to "REPLACING THE REAR BRAKE PADS".
6. Install:
   - brake caliper
   - brake caliper retaining bolts

27 Nm (2.7 m · kg, 19 ft · lb)

7. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

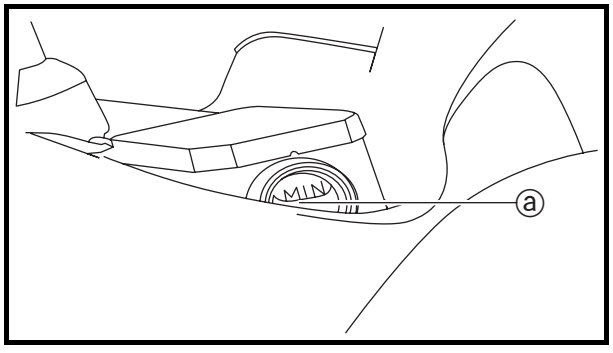
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

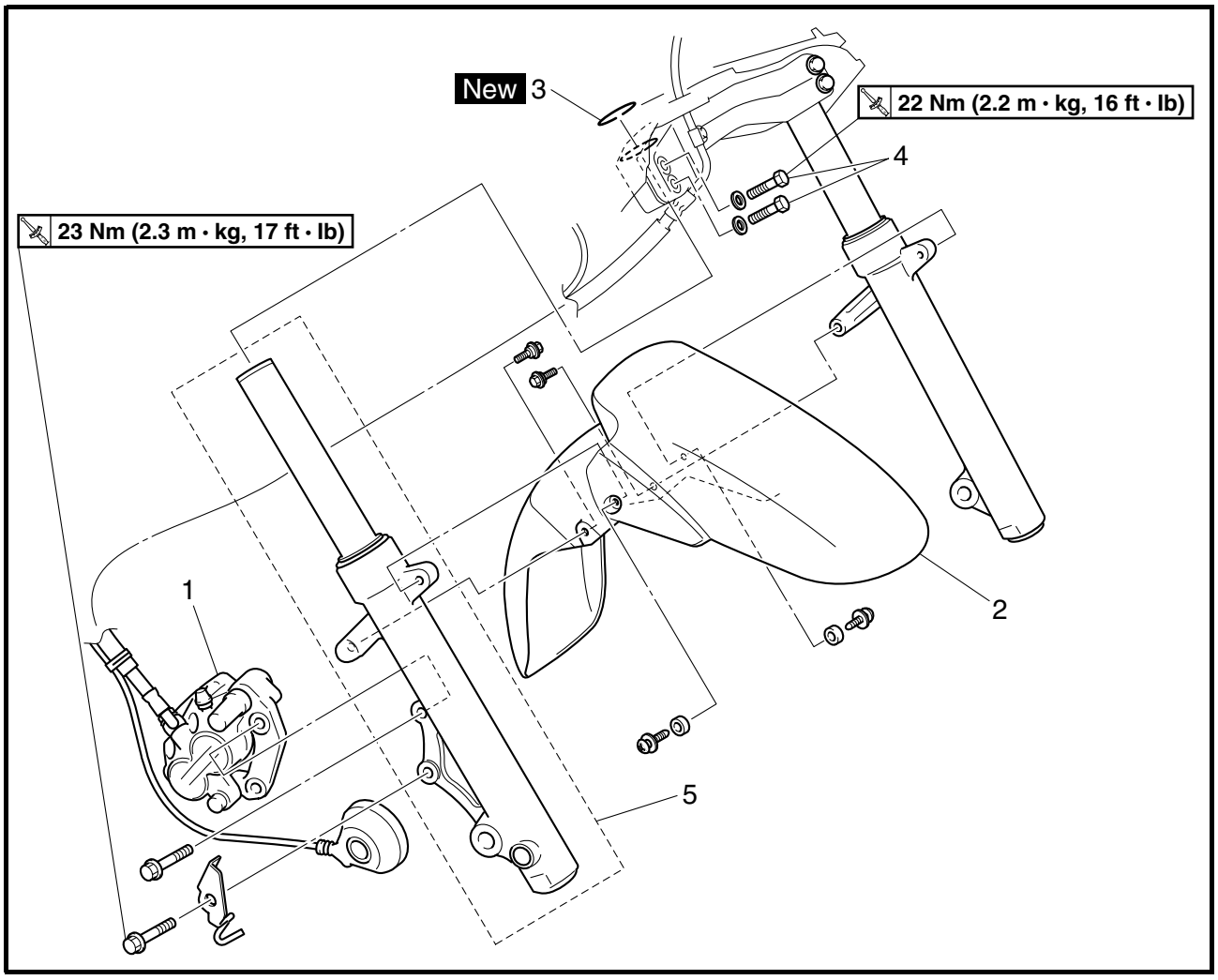
8. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.



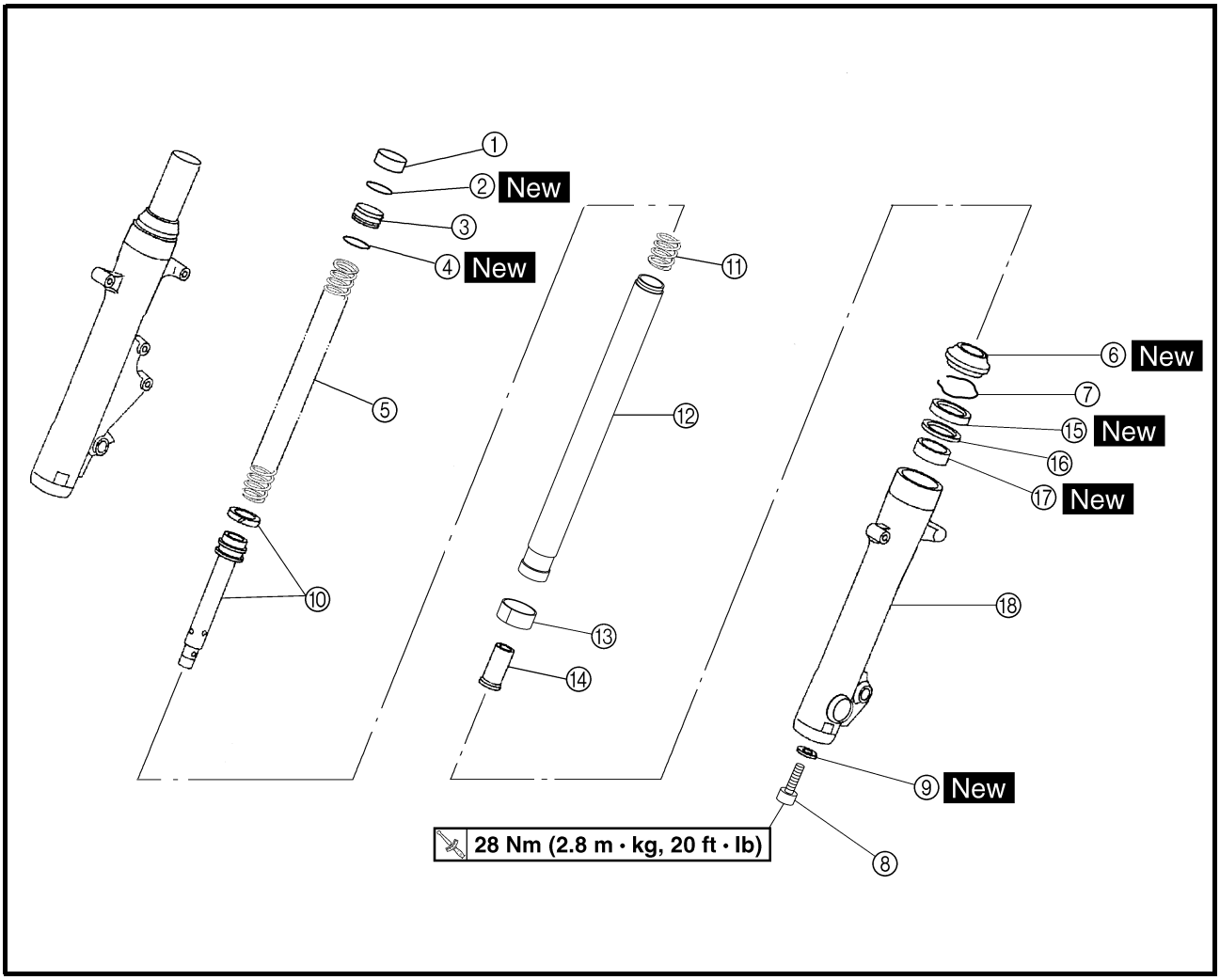
9. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

10. Check:
- brake lever operation
  Soft or spongy feeling → Bleed the brake system.
  Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

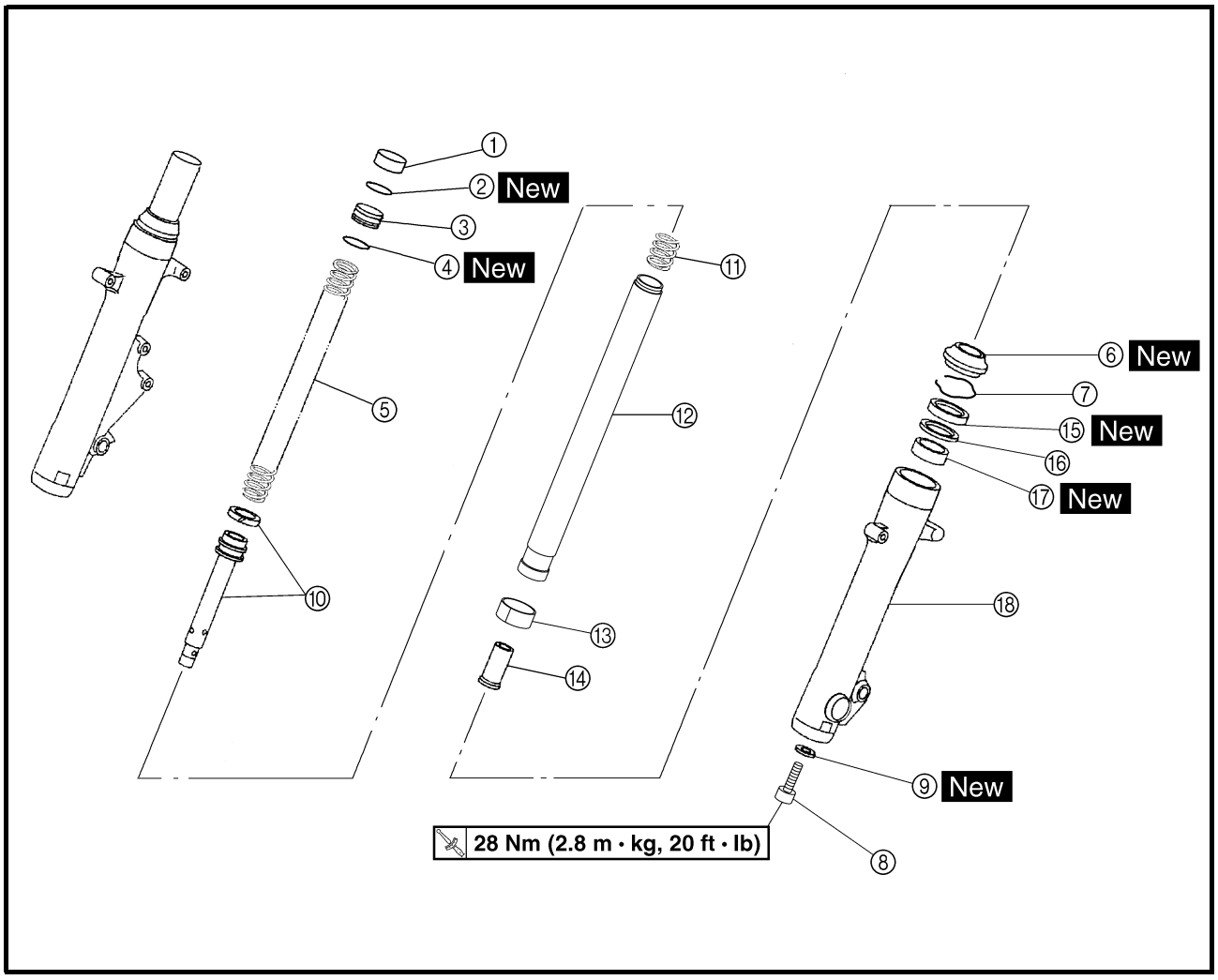
EAS06460
FRONT FORK



Order	Job/Part	Q'ty	Remarks
	Removing the front fork legs		Remove the parts in the order listed. The following procedure applies to both of the front fork legs.
	Front cowling		Refer to "COVERS AND PANELS" in chapter 3.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE DISC".
1	Front brake caliper	1	Refer to "REMOVING THE FRONT FORK LEGS".
2	Front fender	1	
3	Clip	1	Refer to "REMOVING THE FRONT FORK LEGS" and "INSTALLING THE FRONT FORK LEGS".
4	Lower bracket pinch bolt	2	
5	Front fork leg	1	
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the front fork legs		Remove the parts in the order listed. The following procedure applies to both of the front fork legs.
①	Rubber cap	1	
②	Circlip	1	
③	Front fork cap	1	
④	O-ring	1	
⑤	Fork spring	1	Refer to "DISASSEMBLING THE FRONT FORK LEGS" and "ASSEMBLING THE FRONT FORK LEGS".
⑥	Dust seal	1	
⑦	Oil seal clip	1	
⑧	Damper rod bolt	1	
⑨	Copper washer	1	
⑩	Damper rod	1	
⑪	Rebound spring	1	



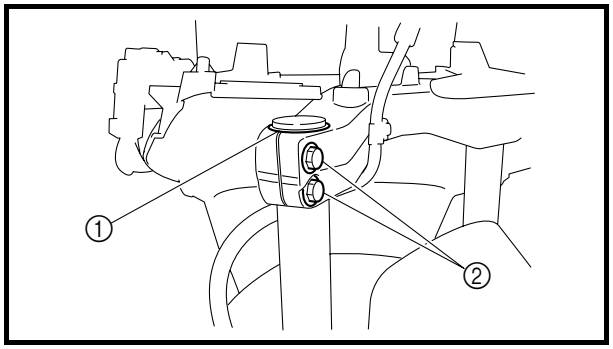
Order	Job/Part	Q'ty	Remarks
⑫	Inner tube	1	Refer to "DISASSEMBLING THE FRONT FORK LEGS" and "ASSEMBLING THE FRONT FORK LEGS".
⑬	Inner tube bushing	1	
⑭	Oil flow stopper	1	
⑮	Oil seal	1	
⑯	Washer	1	
⑰	Outer tube bushing	1	
⑱	Outer tube	1	
			For assembly, reverse the disassembly procedure.

EAS06490
REMOVING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:
Place the vehicle on a suitable stand so that the front wheel is elevated.

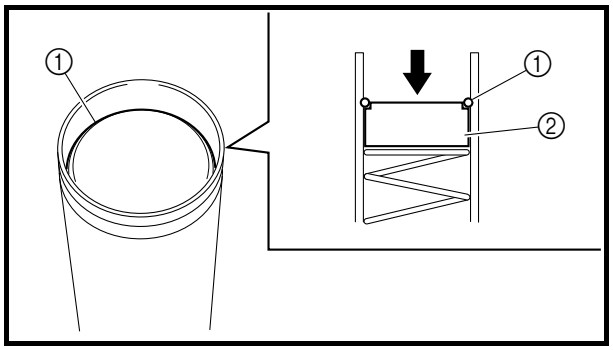


2. Remove:
   • clip ①
3. Loosen:
   • lower bracket pinch bolts ②

⚠ WARNING

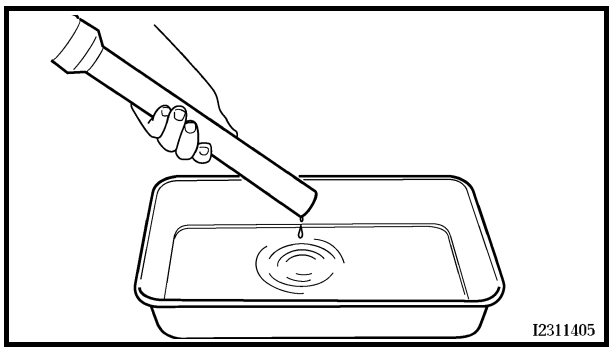
Support the front fork leg while loosening the lower bracket pinch bolts.

4. Remove:
   • front fork leg



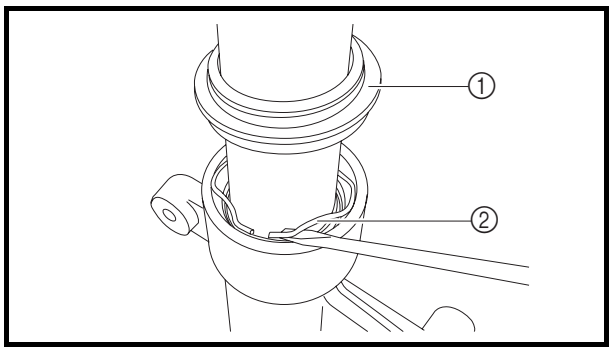
EAS06520
DISASSEMBLING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.
1. Remove:
   • rubber cap
   • circlip ①
   • front fork cap ②
   • O-ring
   • fork spring

NOTE:
Push the front fork cap in the direction of the arrow shown in the illustration to remove the circlip.



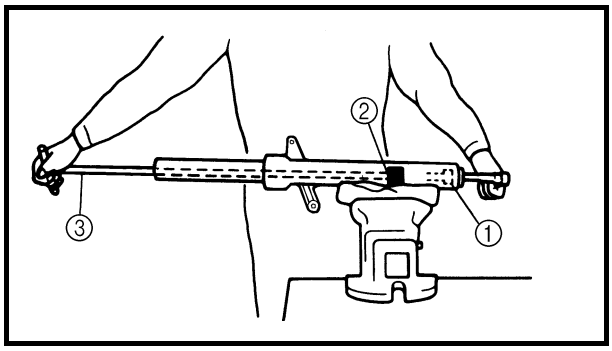
2. Drain:
   • fork oil

NOTE:
Stroke the inner tube several times while draining the fork oil.



3. Remove:
   • dust seal ①
   • oil seal clip ②
   (with a flat-head screwdriver)

CAUTION:
Do not scratch the inner tube.

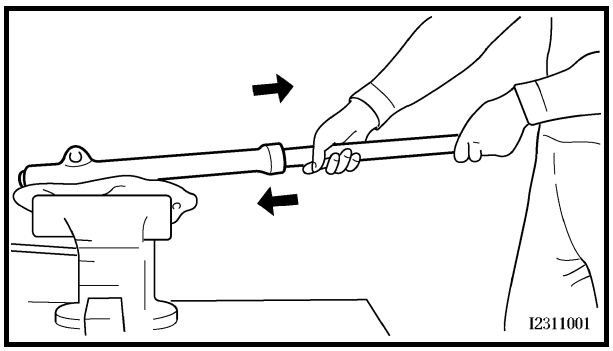


4. Remove:
   • damper rod bolt ①
   • damper rod
   • rebound spring

NOTE:
Hold the damper rod with the damper rod holder ② and T-handle ③, then loosen the damper rod bolt.



Damper rod holder
90890-01294
T-handle
90890-01326



5. Remove:
   • inner tube

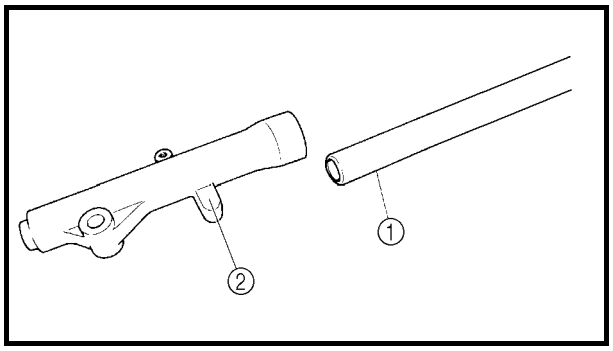
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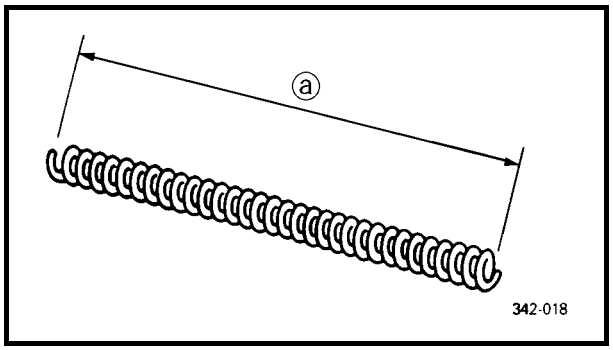
a. Hold the front fork leg horizontally.
b. Securely clamp the brake caliper bracket in a vise with soft jaws.
c. Separate the inner tube from the outer tube by pulling the inner tube forcefully but carefully.

CAUTION:

• Excessive force will damage the oil seal and bushing. A damaged oil seal or bushing must be replaced.
• Avoid bottoming the inner tube into the outer tube during the above procedure, as the oil flow stopper will be damaged.

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EAS06560
CHECKING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

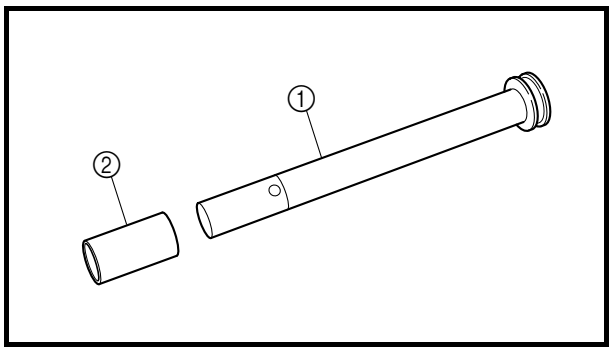
1. Check:
   • inner tube ①
   • outer tube ②
   Bends/damage/scratches → Replace.

⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.

2. Measure:
   • spring free length ⓐ
   Out of specification → Replace.

Spring free length
308.0 mm (12.126 in)
Limit
301.87 mm (11.885 in)



3. Check:
   - damper rod ①
     Damage/wear → Replace.
     Obstruction → Blow out all of the oil passages with compressed air.
   - oil flow stopper ②
     Damage → Replace.

CAUTION:

When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.

EAS06590
ASSEMBLING THE FRONT FORK LEGS

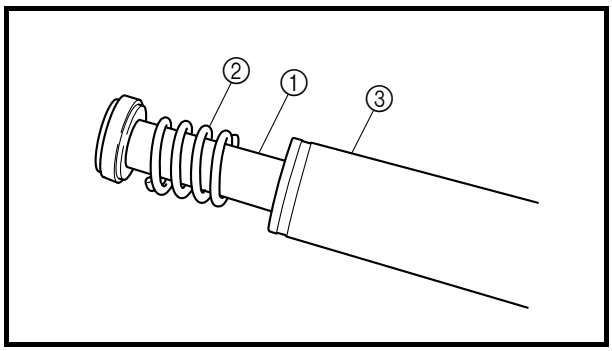
The following procedure applies to both of the front fork legs.

⚠ WARNING

- **Make sure the oil levels in both front fork legs are equal.**
- **Uneven oil levels can result in poor handling and a loss of stability.**

NOTE:

- When assembling the front fork leg, be sure to replace the following parts:
  - outer tube bushing
  - inner tube bushing
  - oil seal
  - dust seal
  - O-ring
  - clip
- Before assembling the front fork leg, make sure all of the components are clean.



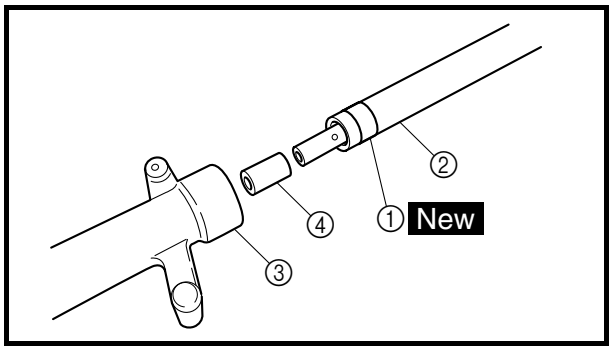
1. Install:
   - damper rod ①
   - rebound spring ②

CAUTION:

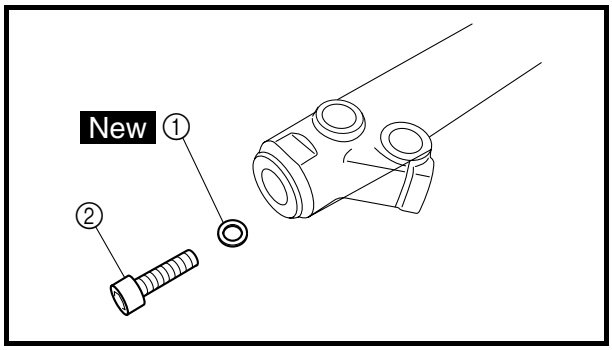
Allow the damper rod to slide slowly down the inner tube ③ until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.

2. Lubricate:
   - inner tube's outer surface

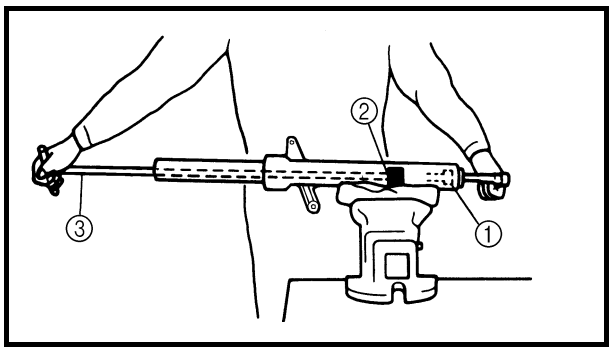
	Recommended lubricant **Fork oil 15 W or equivalent**



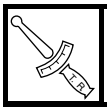
3. Install:
   - inner tube bushing ① New
   - inner tube ②
     (into outer tube ③)
   - oil flow stopper ④



4. Install:
   - copper washer ① New
   - damper rod bolt ②

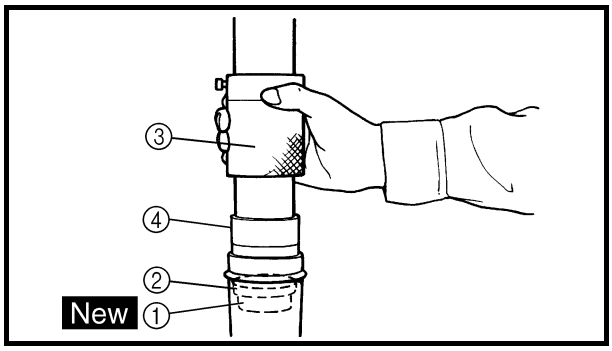


5. Tighten:
   • damper rod bolt ①

	**Damper rod bolt** **28 Nm (2.8 m · kg, 20 ft · lb)**

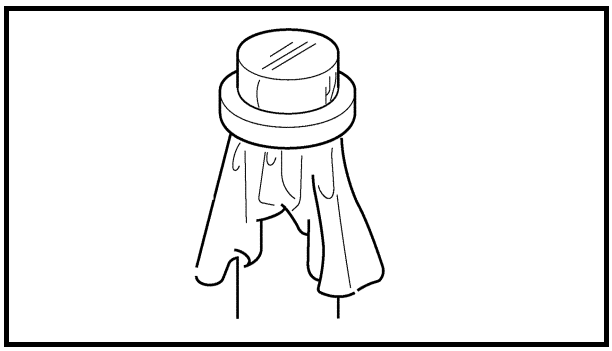
NOTE:
Hold the damper rod with the damper rod holder ② and T-handle ③, then tighten the damper rod bolt.

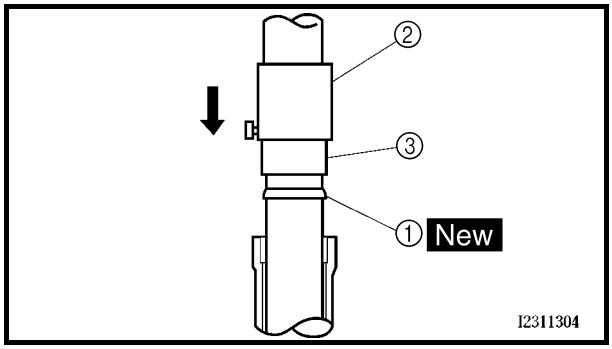
	**Damper rod holder** **90890-01294** **T-handle** **90890-01326**



6. Install:
   • outer tube bushing ① New
   • washer ②
   (with the fork seal driver weight ③ and fork seal driver attachment ④)

	**Fork seal driver weight** **90890-01367** **Fork seal driver attachment (ø36)** **90890-01370**





7. Install:
   • oil seal ① New
   (with the fork seal driver weight ② and fork seal driver attachment ③)

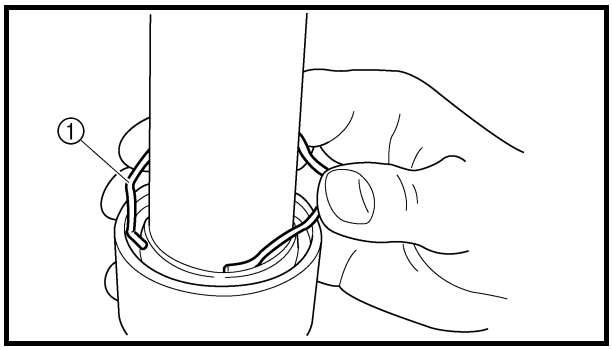
CAUTION:

Make sure the numbered side of the oil seal faces up.

Fork seal driver weight
90890-01367
Fork seal driver attachment (ø36)
90890-01370

NOTE:

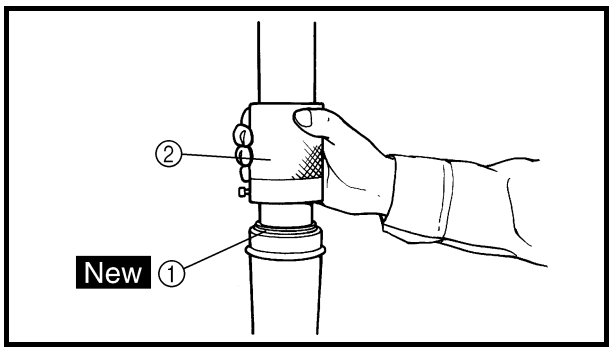
- Before installing the oil seal, lubricate its lips with lithium-soap-based grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag to protect the oil seal during installation.



8. Install:
   • oil seal clip ①

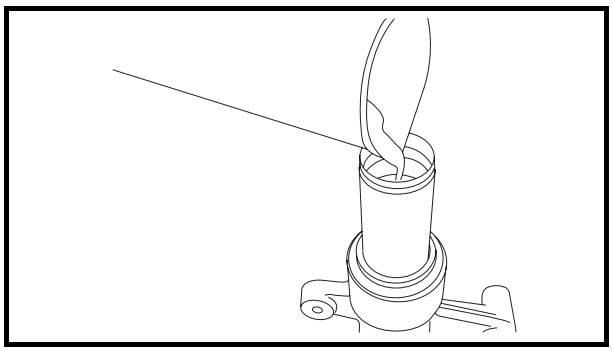
NOTE:

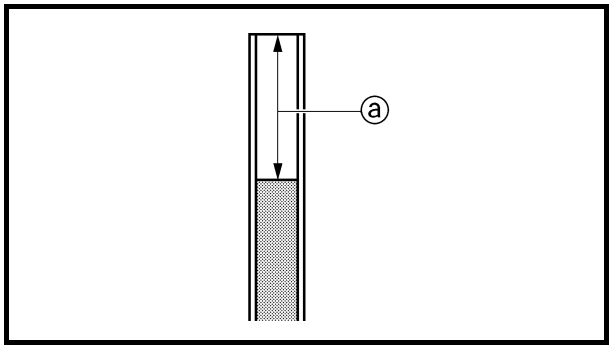
Adjust the oil seal clip so that it fits into the outer tube's groove.



9. Install:
   • dust seal ① New
   (with the fork seal driver weight ②)

Fork seal driver weight
90890-01367



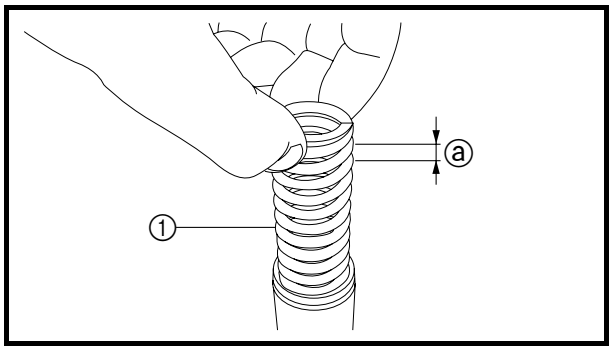


10.Fill:
- front fork leg
  (with the specified amount of the recommended fork oil)

Quantity (each front fork leg)
195.0 cm³
(6.86 Imp oz, 6.59 US oz)
Recommended oil
Fork oil 15 W or equivalent

Front fork leg oil level ⓐ (from the top of the inner tube, with the inner tube fully compressed and without the fork spring)
105.0 mm (4.13 in)

NOTE:
- While filling the front fork leg, keep it upright.
- After filling, slowly pump the front fork leg up and down to distribute the fork oil.

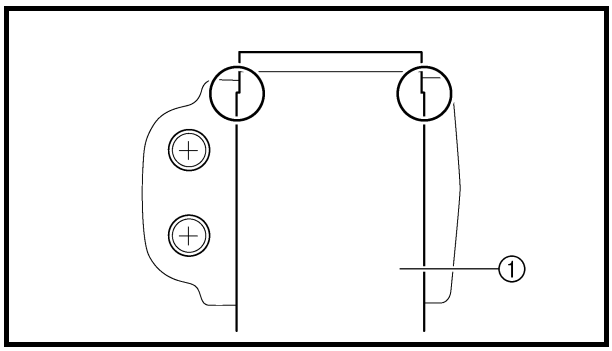


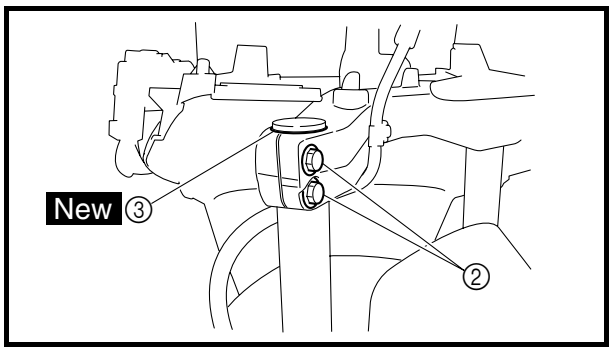
11.Install:
- fork spring ①

NOTE:
Install the spring with the smaller pitch ⓐ facing up.

12.Install:
- O-ring New
  (to front fork cap)
- front fork cap
- circlip New

NOTE:
- Before installing the cap, lubricate its O-ring with grease.
- Insert the front fork cap into the inner tube, and then install the circlip, making sure that the cap is securely held in place with the circlip.





EAS06630
INSTALLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Install:
   - front fork leg ①
   - lower bracket pinch bolts ②

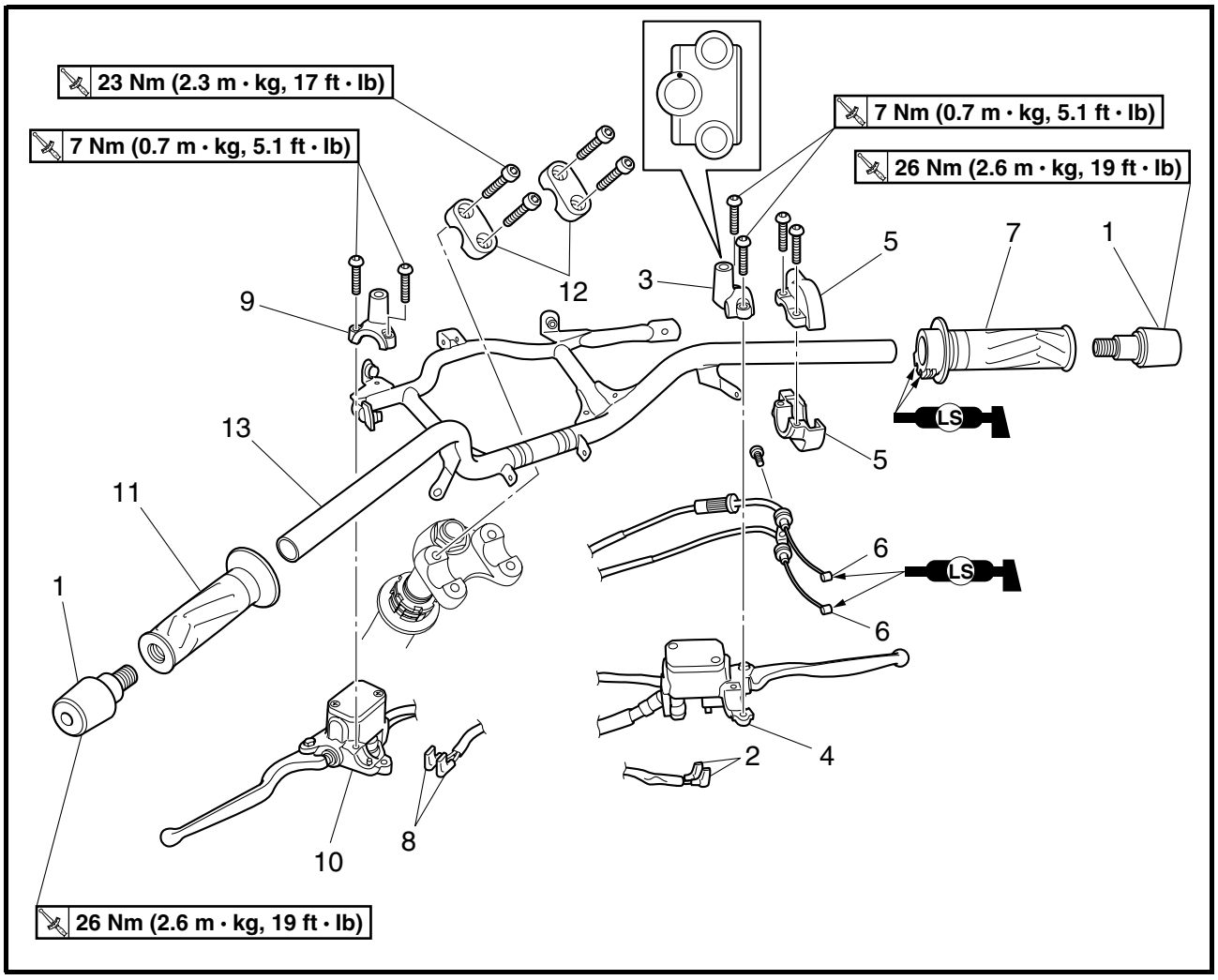
22 Nm (2.2 m · kg, 16 ft · lb)

NOTE:

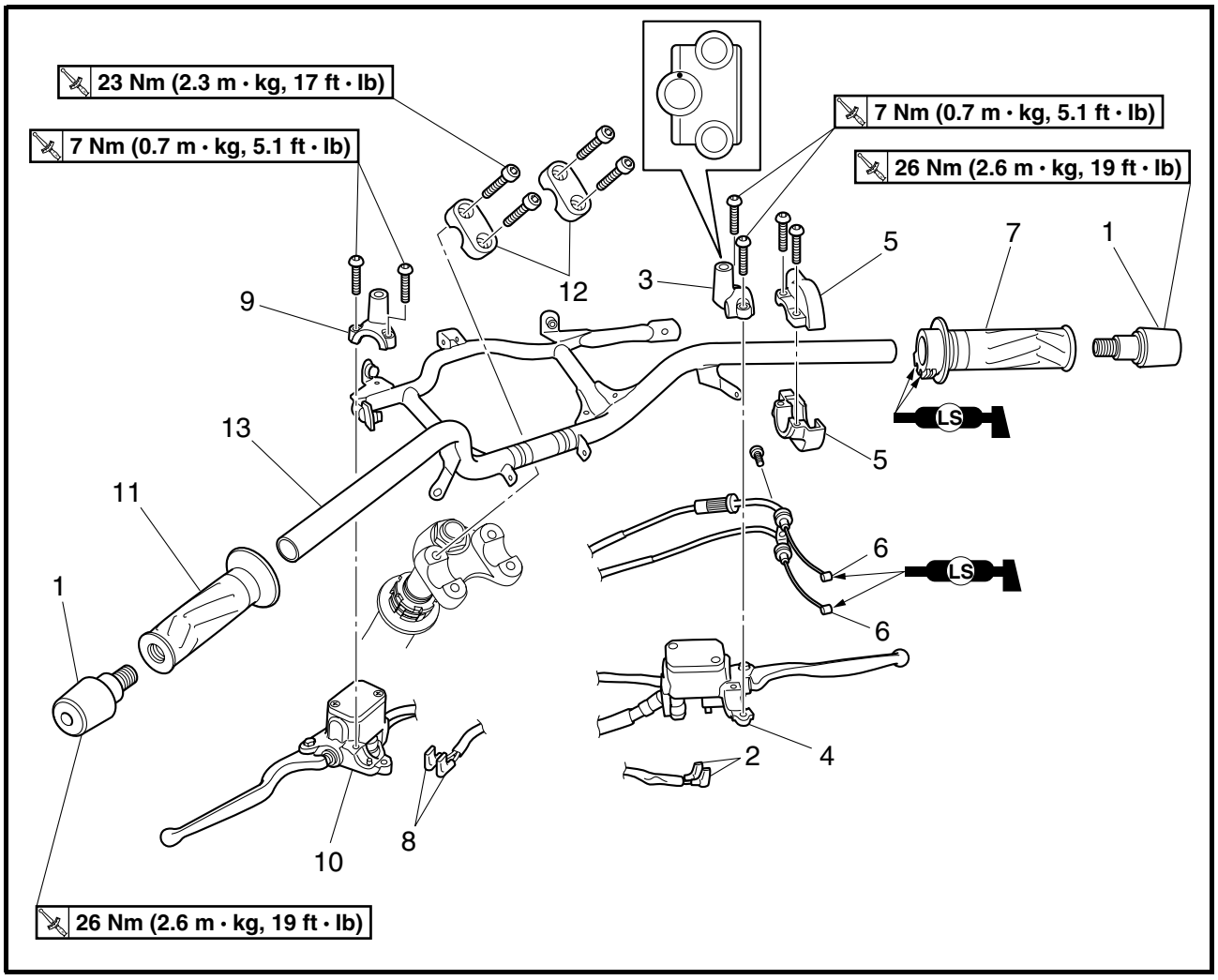
Pull up the inner tube until it stops, and then tighten the lower bracket pinch bolts.

2. Install:
   - clip ③ New

EAS06640
HANDLEBAR



Order	Job/Part	Q'ty	Remarks
	Removing the handlebar		Remove the parts in the order listed.
	Handlebar lower cover		Refer to "COVERS AND PANELS" in chapter 3.
1	Grip end	2	
2	Front brake light switch connector	2	Disconnect.
3	Front brake master cylinder holder	1	Refer to "INSTALLING THE HANDLEBAR".
4	Front brake master cylinder	1	
5	Throttle cable housing	2	Disconnect. Refer to "REMOVING THE HANDLEBAR" and "INSTALLING THE HANDLEBAR".
6	Throttle cable	2	
7	Throttle grip	1	
8	Rear brake light switch connector	2	Disconnect.
9	Rear brake master cylinder holder	1	Refer to "INSTALLING THE HANDLEBAR".
10	Rear brake master cylinder	1	



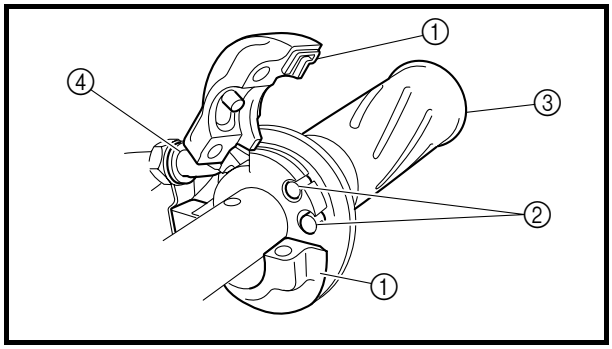
Order	Job/Part	Q'ty	Remarks
11	Handlebar grip	1	Refer to "REMOVING THE HANDLEBAR" and "INSTALLING THE HANDLEBAR".
12	Upper handlebar holder	2	Refer to "INSTALLING THE HANDLEBAR".
13	Handlebar	1	
			For installation, reverse the removal procedure.

EAS06660
REMOVING THE HANDLEBAR

1. Stand the vehicle on a level surface.

⚠ WARNING

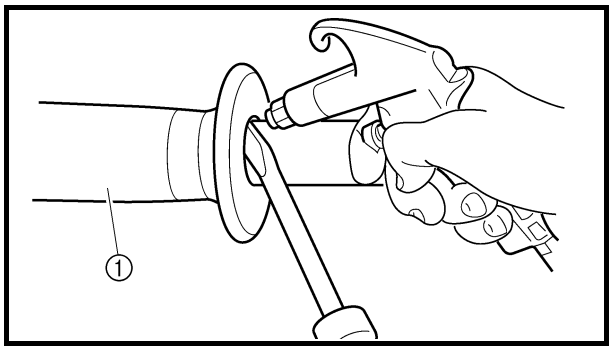
Securely support the vehicle so that there is no danger of it falling over.



2. Remove:
   - throttle cable housings ①
   - throttle cables ②
   - throttle grip ③

NOTE:

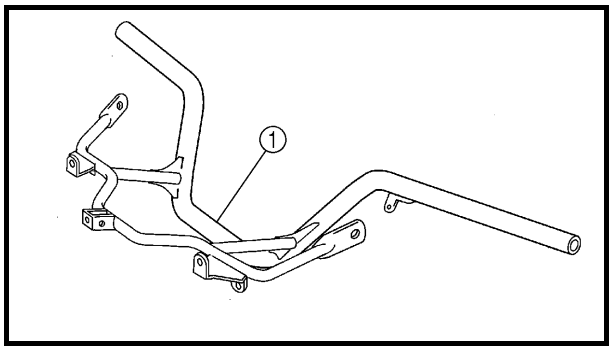
While removing the throttle cable housing, pull back the rubber cover ④.



3. Remove:
   - handlebar grip ①

NOTE:

Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.



EAS06680
CHECKING THE HANDLEBAR

1. Check:
   - handlebar ①
     Bends/cracks/damage → Replace.

⚠ WARNING

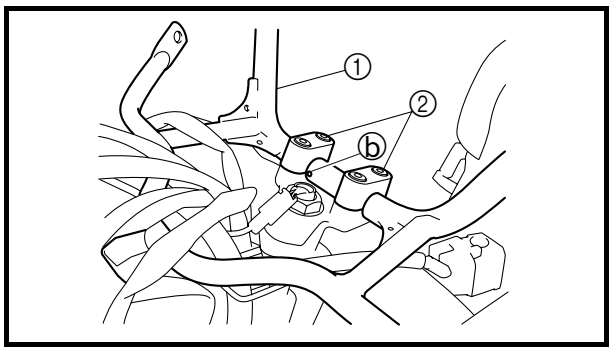
Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

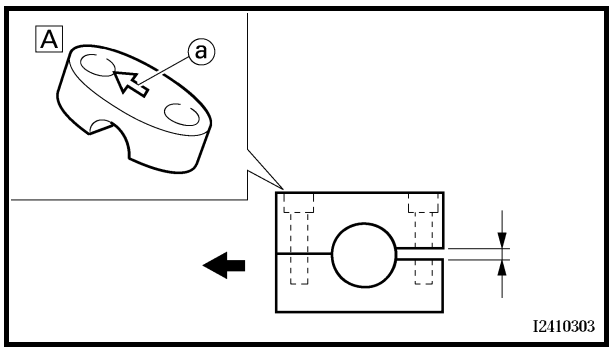
EAS06700
INSTALLING THE HANDLEBAR

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.





2. Install:
   - handlebar ①
   - upper handlebar holders ②

23 Nm (2.3 m · kg, 17 ft · lb)

CAUTION:

First, tighten the bolt on the front side of the handlebar holders, and then on the rear side.

NOTE:

- The upper handlebar holders should be installed with the arrow marks ⓐ facing forward A.
- Align the match mark ⓑ on the handlebar with the upper surface of the lower handlebar holder.

3. Install:
   - handlebar grip

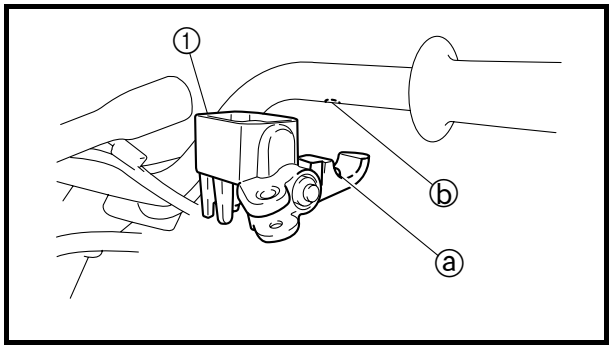
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a. Apply a thin coat of rubber adhesive onto the left end of the handlebar.
b. Slide the handlebar grip over the left end of the handlebar.
c. Wipe off any excess rubber adhesive with a clean rag.

⚠ WARNING

Do not touch the handlebar grip until the rubber adhesive has fully dried.

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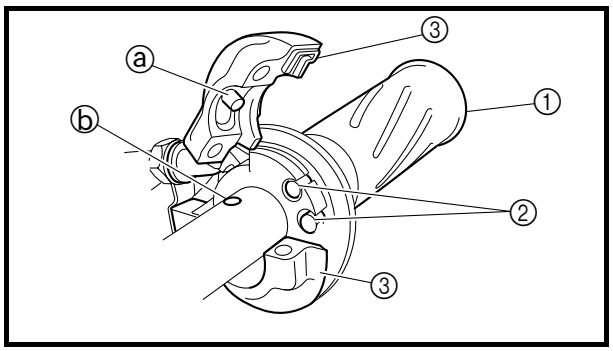


4. Install:
   - rear brake master cylinder ①
   - rear brake master cylinder holder

7 Nm (0.7 m · kg, 5.1 ft · lb)

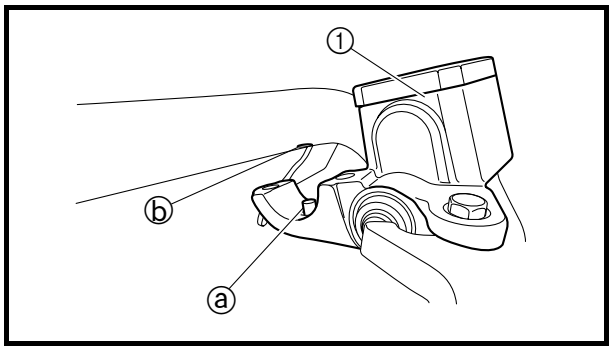
NOTE:

- Align the projection ⓐ on the brake master cylinder with the hole ⓑ in the handlebar.
- First tighten the front bolt, then the rear bolt.



5 Install:
- throttle grip ①
- throttle cables ②
- throttle cable housings ③

NOTE:
- Lubricate the inside of the throttle grip with a thin coat of lithium-soap-based grease and install it onto the handlebar.
- Align the projection ⓐ on the throttle cable housing with the hole ⓑ in the handlebar.
- Be sure to slide the throttle cable rubber cover to its original position.



6. Install:
- front brake master cylinder ①
- front brake master cylinder holder

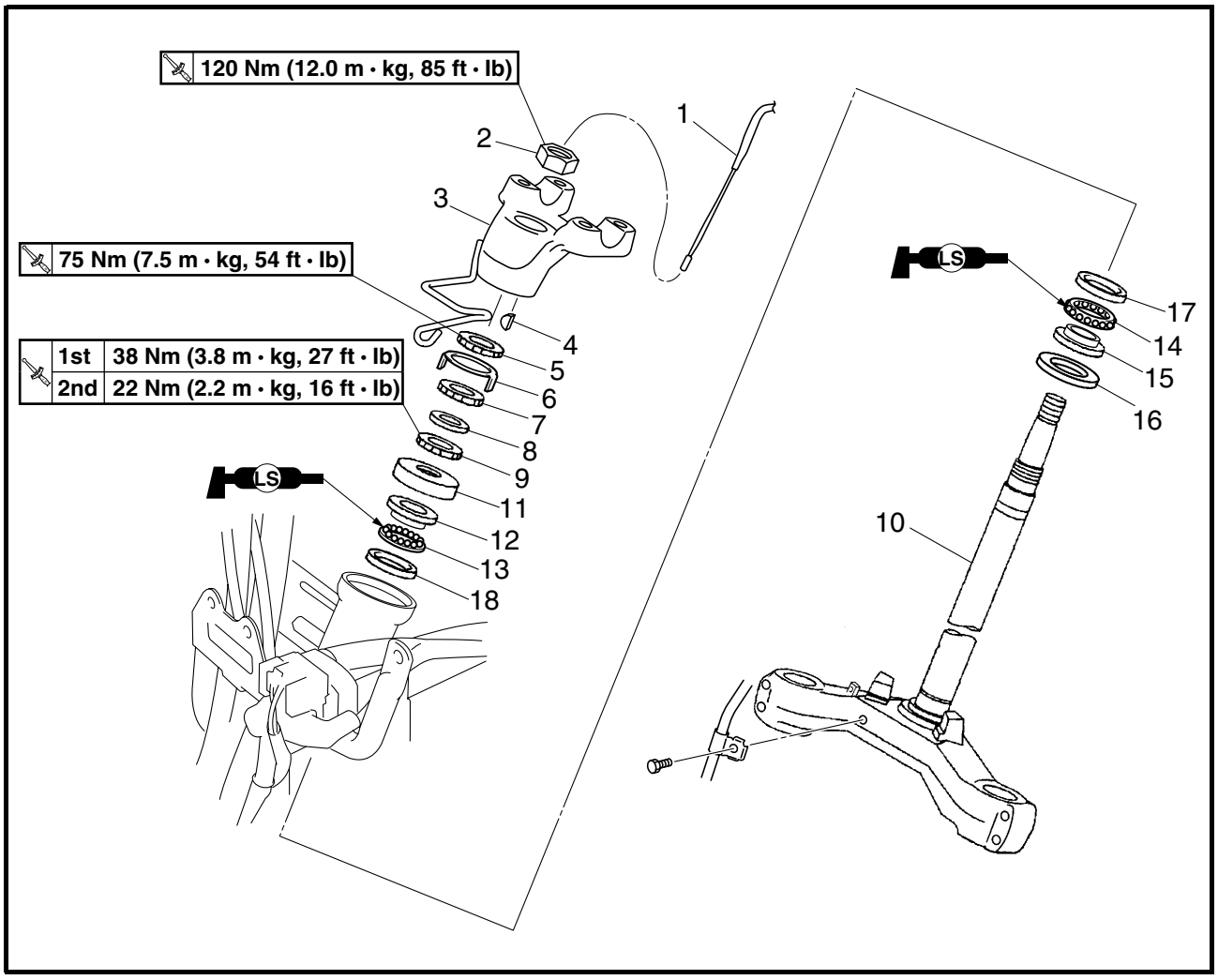
7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:
- Align the projection ⓐ on the brake master cylinder with the hole ⓑ in the handlebar.
- First tighten the front bolt, then the rear bolt.

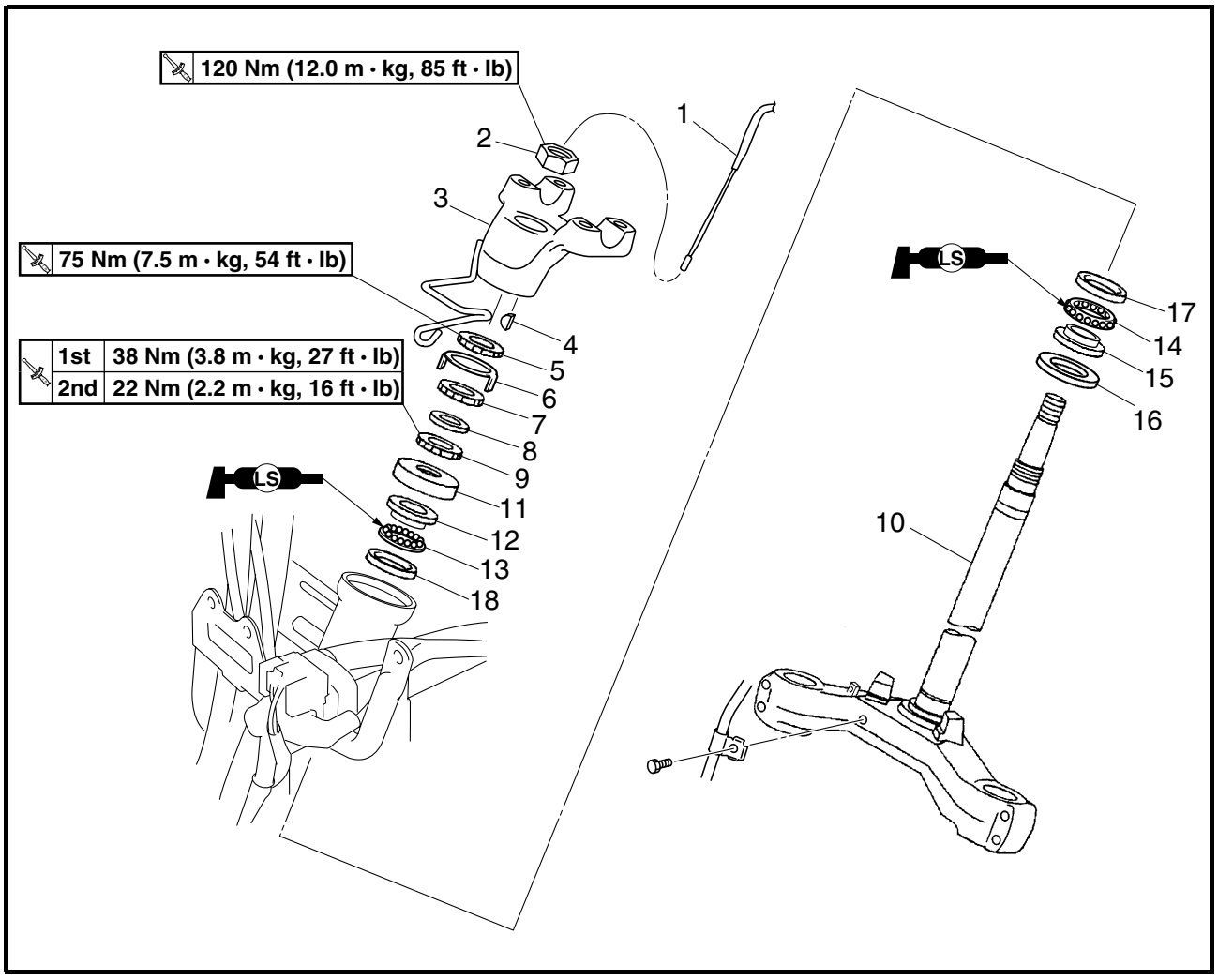
7. Adjust:
- throttle cable free play
  Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

Throttle cable free play (at the flange of the throttle grip)
4.0 ~ 6.0 mm (0.16 ~ 0.24 in)

EAS06750
STEERING HEAD
LOWER BRACKET



Order	Job/Part	Q'ty	Remarks
	Removing the lower bracket		Remove the parts in the order listed.
	Handlebar lower cover		Refer to "COVERS AND PANELS" in chapter 3.
	Front fork		Refer to "FRONT WHEEL AND BRAKE DISC".
	Handlebar		Refer to "HANDLEBAR".
1	Air temperature sensor	1	
2	Steering stem nut	1	
3	Lower handlebar holder	1	Refer to "REMOVING THE LOWER BRACKET" and "INSTALLING THE STEERING HEAD".
4	Woodruff key	1	
5	Upper ring nut	1	
6	Lock washer	1	
7	Center ring nut	1	
8	Rubber washer	1	
9	Lower ring nut	1	
10	Lower bracket	1	



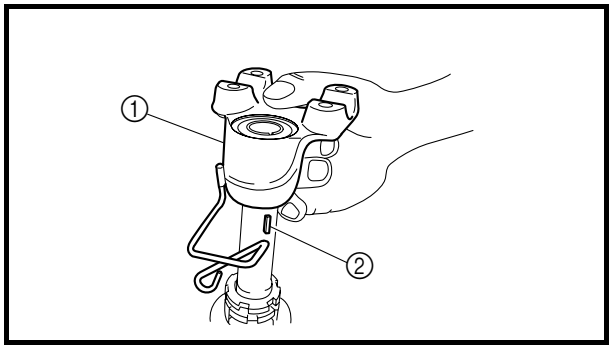
Order	Job/Part	Q'ty	Remarks
11	Upper bearing cover	1	
12	Upper bearing inner race	1	Refer to "INSTALLING THE STEERING HEAD".
13	Upper bearing	1	
14	Lower bearing	1	
15	Lower bearing outer race	1	
16	Dust seal	1	
17	Lower bearing inner race	1	Refer to "INSTALLING THE STEERING HEAD".
18	Upper bearing outer race	1	
			For installation, reverse the removal procedure.

EAS06780
REMOVING THE LOWER BRACKET

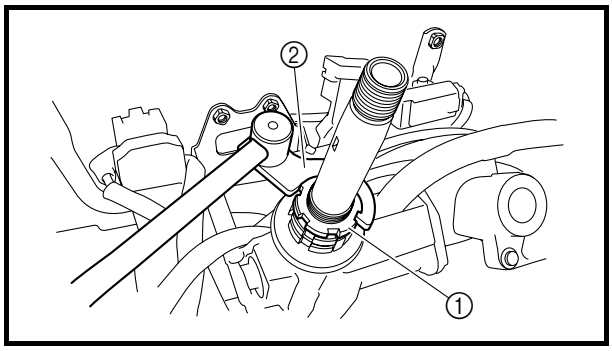
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

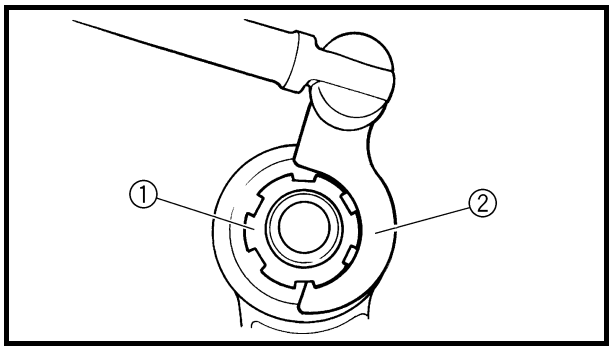


2. Remove:
   - lower handlebar holder ①
   - woodruff key ②



3. Remove:
   - upper ring nut ①
     (with the steering nut wrench ②)
   - lock washer
   - center ring nut
   - rubber washer

	**Steering nut wrench** **90890-01403**



4. Remove:
   - lower ring nut ①
     (with the steering nut wrench ②)
   - lower bracket

	**Steering nut wrench** **90890-01403**

⚠ WARNING

Securely support the lower bracket so that there is no danger of it falling.

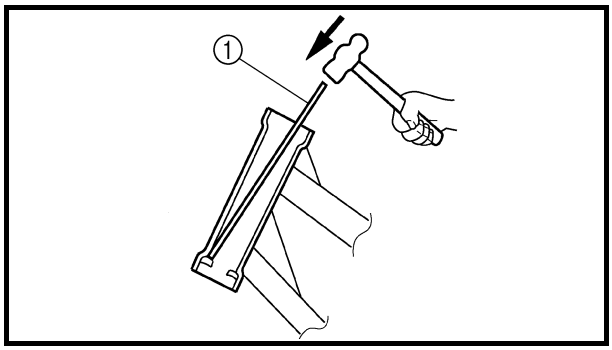
EAS06810
CHECKING THE STEERING HEAD

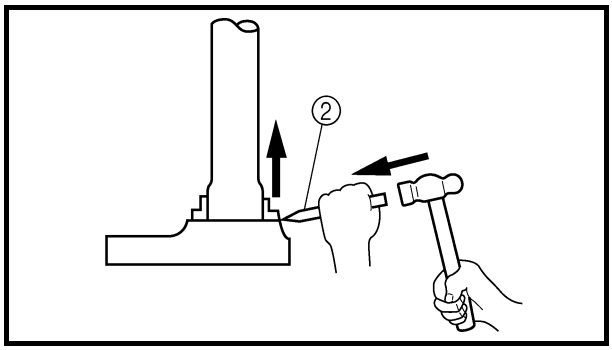
1. Wash:
   - bearings
   - bearing races

	Recommended cleaning solvent **Kerosene**

2. Check:
   - bearings
   - bearing races

   Damage/pitting → Replace.





3. Replace:
   - bearings
   - bearing races

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a. Remove the bearing races from the steering head pipe with a long rod ① and a hammer.
b. Remove the bearing race from the lower bracket with a floor chisel ② and a hammer.
c. Install a new rubber seal and new bearing races.

CAUTION:

If the bearing race is not installed properly, the steering head pipe could be damaged.

NOTE:

- Always replace the bearings and bearing races as a set.
- Whenever the steering head is disassembled, replace the dust seal.

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4. Check:
   - lower handlebar holder
   - lower bracket

   (along with the steering stem)
   Bends/cracks/damage → Replace.

EAS06840
INSTALLING THE STEERING HEAD

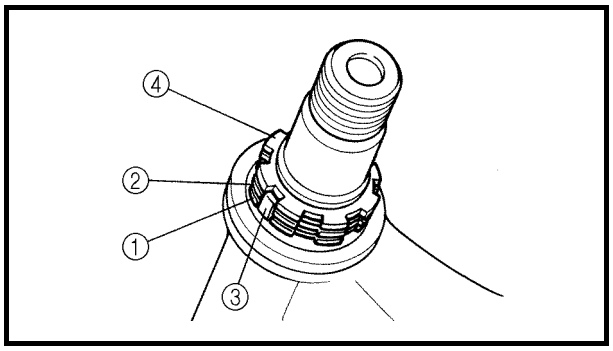
1. Lubricate:
   - upper bearing
   - lower bearing
   - bearing races

	Recommended lubricant **Lithium-soap-based grease**

2. Install:
   - upper bearing

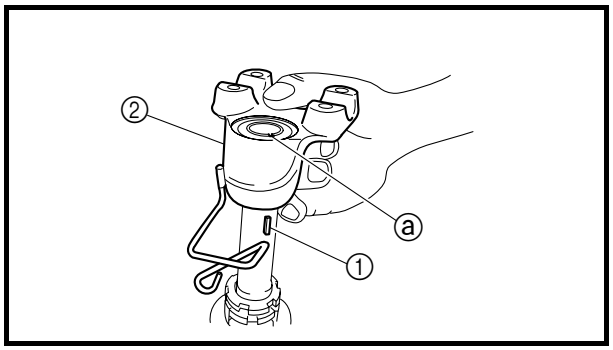
⚠ WARNING

When installing the upper bearing, do not mistake the up and down directions for the upper bearing.



3. Install:
   - lower ring nut ①
   - rubber washer
   - center ring nut ②
   - lock washer ③
   - upper ring nut ④

   Refer to "CHECKING AND ADJUSTING THE STEERING HEAD" in chapter 3.



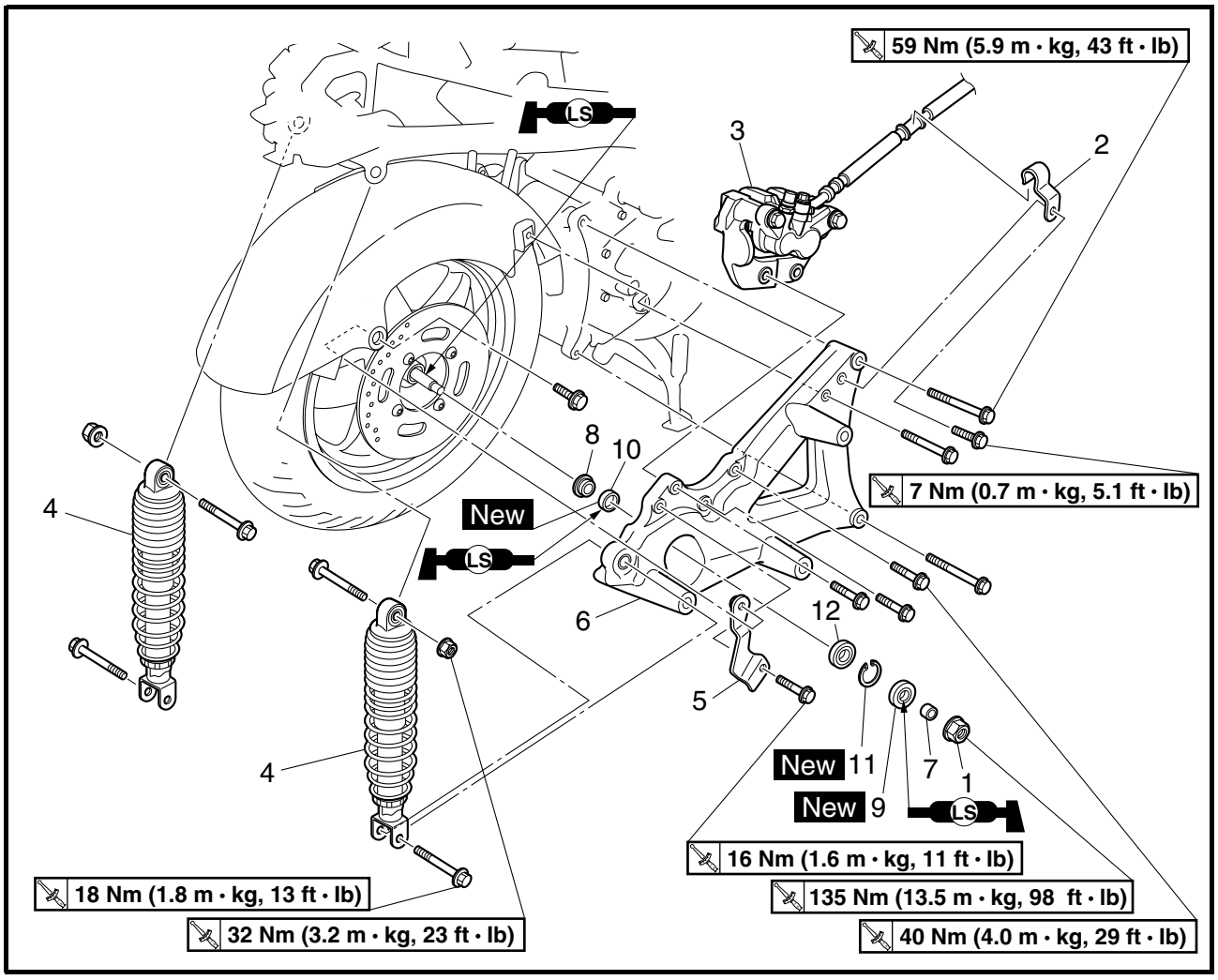
4. Install:
   - woodruff key ①
   - lower handlebar holder ②
   - steering stem nut

120 Nm (12.0 m · kg, 85 ft · lb)

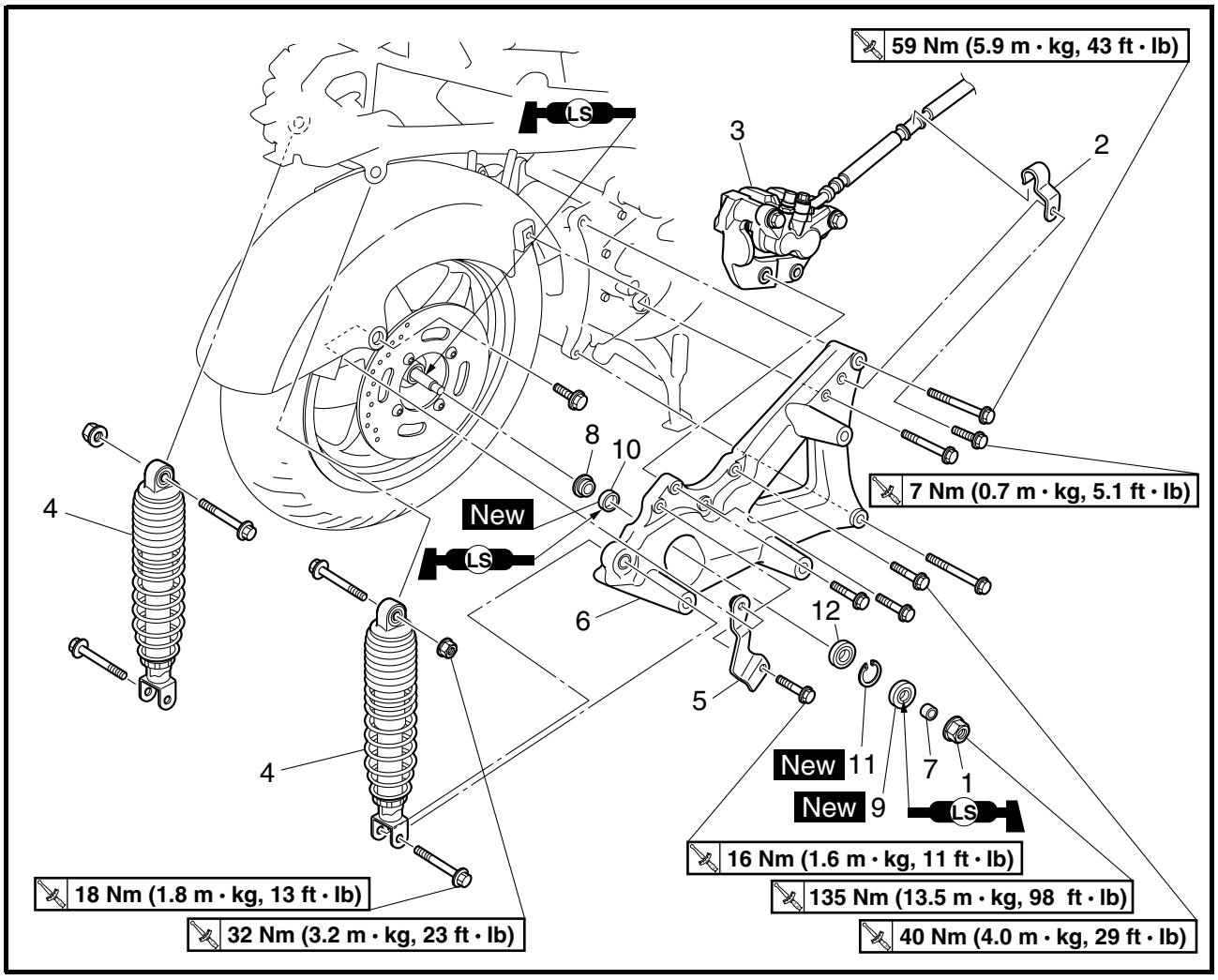
NOTE:

Align the woodruff key with the groove ⓐ in the lower handlebar holder.

EAS06850
REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM



Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber assemblies and swingarm		Remove the parts in the order listed.
	Mudguard assembly		Refer to "COVERS AND PANELS" in chapter 3.
	Muffler		Refer to "ENGINE REMOVAL" in chapter 5.
1	Rear wheel axle nut	1	Refer to "REMOVING THE SWINGARM" and "INSTALLING THE SWINGARM".
2	Brake hose holder	1	
3	Rear brake caliper	1	
4	Rear shock absorber assembly	2	Refer to "REMOVING THE REAR SHOCK ABSORBER ASSEMBLIES" and "INSTALLING THE REAR SHOCK ABSORBER ASSEMBLIES".



Order	Job/Part	Q'ty	Remarks
5	Rear fender bracket	1	Refer to "REMOVING THE SWINGARM" and "INSTALLING THE SWINGARM".
6	Swingarm	1	
7	Spacer	1	
8	Collar	1	
9	Oil seal	1	
10	Oil seal	1	
11	Circlip	1	
12	Bearing	1	
			For installation, reverse the removal procedure.

EAS06930
REMOVING THE REAR SHOCK ABSORBER ASSEMBLIES

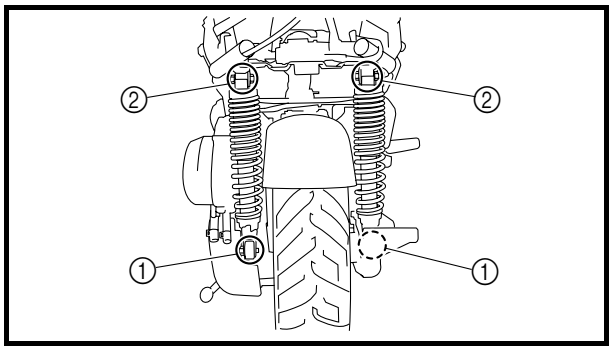
1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:

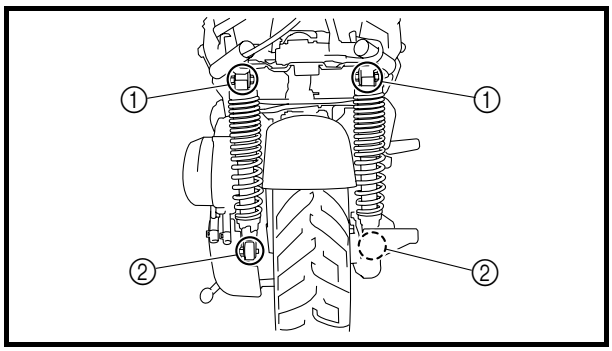
Place the vehicle on a centerstand so that the rear wheel is elevated.



2. Remove:
   - rear shock absorber lower bolts ①
   - rear shock absorber upper bolts ②

EAS06960
CHECKING THE REAR SHOCK ABSORBER ASSEMBLIES

1. Check:
   - rear shock absorber rod
     Bends/damage → Replace the rear shock absorber assembly.
   - rear shock absorber
     Oil leaks → Replace the rear shock absorber assembly.
   - spring
     Damage/wear → Replace the rear shock absorber assembly.
   - bushings
     Damage/wear → Replace.
   - bolts
     Bends/damage/wear → Replace.



EAS06990
INSTALLING THE REAR SHOCK ABSORBER ASSEMBLIES

1. Install:
   - rear shock absorber upper nuts ①
     32 Nm (3.2 m · kg, 23 ft · lb)
   - rear shock absorber lower bolts ②
     18 Nm (1.8 m · kg, 13 ft · lb)

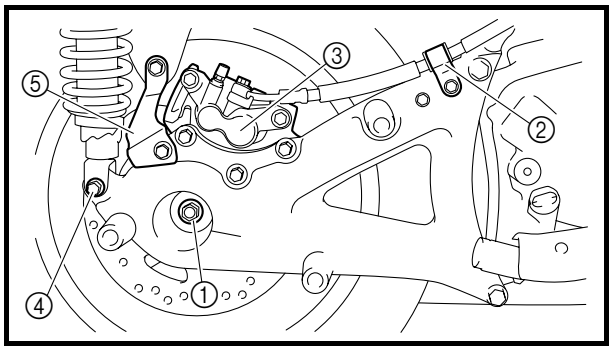
EAS07030
REMOVING THE SWINGARM

1. Stand the vehicle on a level surface.

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

NOTE:
Place the vehicle on a centerstand so that the rear wheel is elevated.

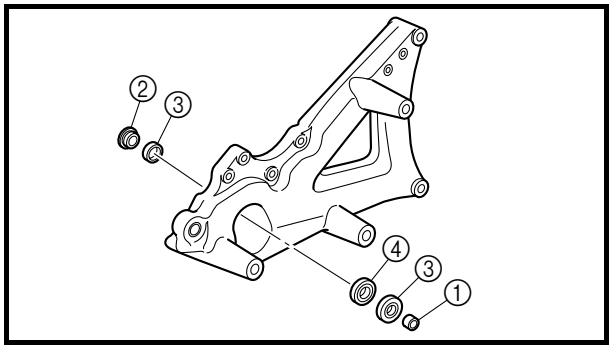


2. Remove:
   - rear wheel axle nut ①
   - brake hose holder ②
   - rear brake caliper ③
   - rear shock absorber lower bolt (right) ④
   - rear fender bracket ⑤

NOTE:
Do not squeeze the rear brake lever when removing the rear brake caliper.

3. Remove:
   - swingarm

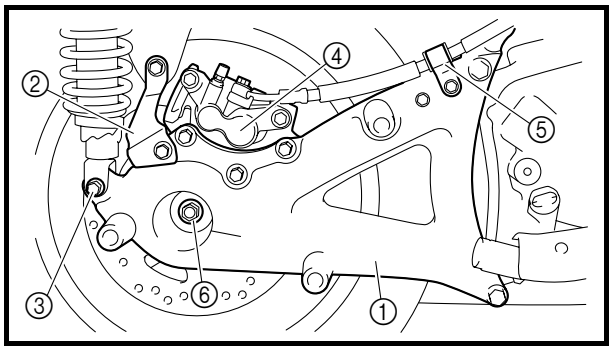
EAS07070
CHECKING THE SWINGARM
1. Check:
   - swingarm
     Bends/cracks/damage → Replace.



2. Check:
   - spacer ①
   - collar ②
   - oil seals ③
   - bearing ④
     Damage/wear → Replace.

EAS07120
INSTALLING THE SWINGARM
1. Lubricate:
   - bearings
   - oil seal lips
   - drive axle

	Recommended lubricant **Lithium-soap-based grease**



2. Install:
   - swingarm ①
     59 Nm (5.9 m · kg, 43 ft · lb)
   - rear fender bracket ②
   - rear fender bracket lower bolt
     16 Nm (1.6 m · kg, 11 ft · lb)
   - rear shock absorber lower bolt (right) ③
     18 Nm (1.8 m · kg, 13 ft · lb)
   - rear brake caliper ④
     40 Nm (4.0 m · kg, 29 ft · lb)
   - brake hose holder ⑤
     7 Nm (0.7 m · kg, 5.1 ft · lb)
   - rear wheel axle nut ⑥
     135 Nm (13.5 m · kg, 98 ft · lb)

CHAPTER 5
ENGINE

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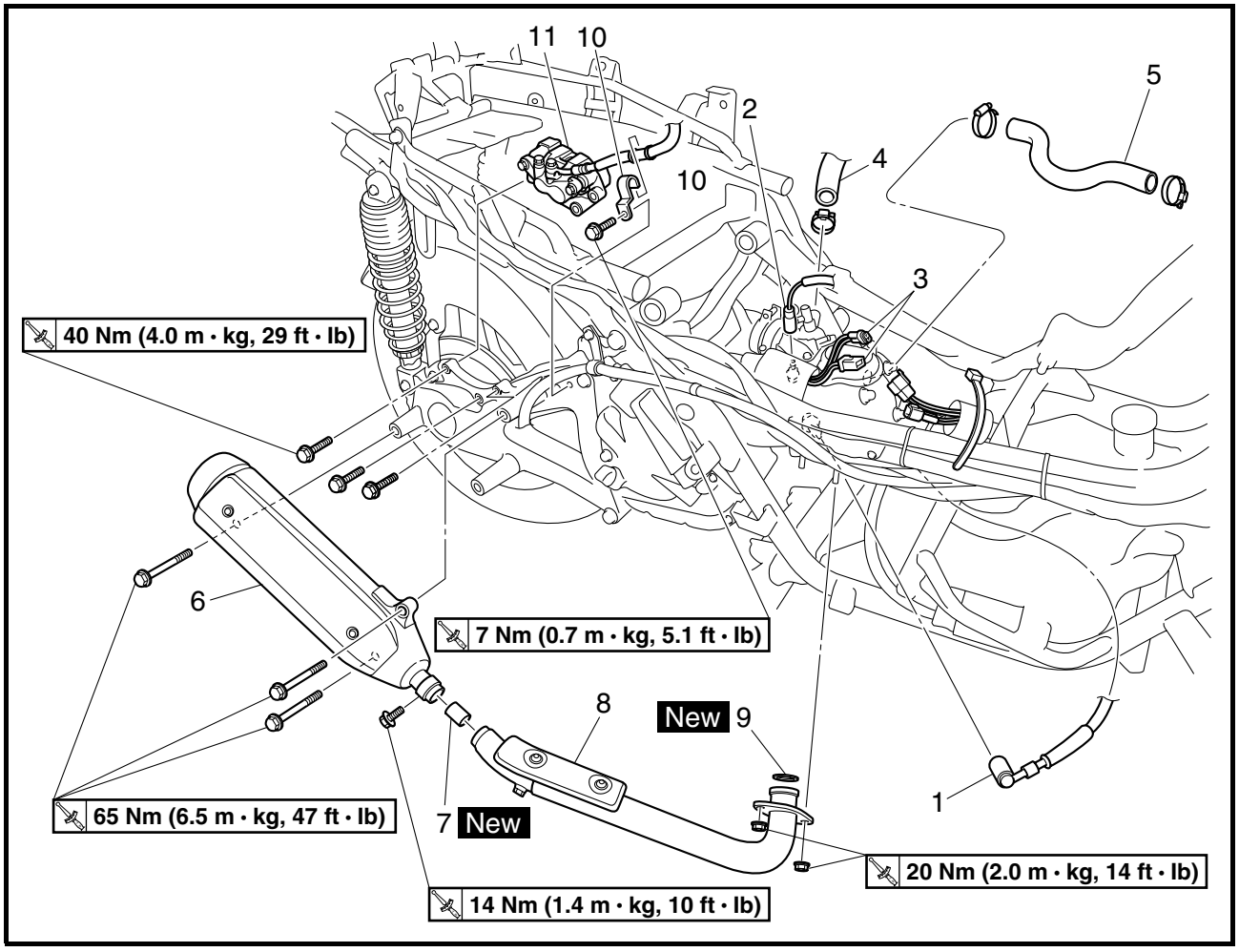
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EAS00188

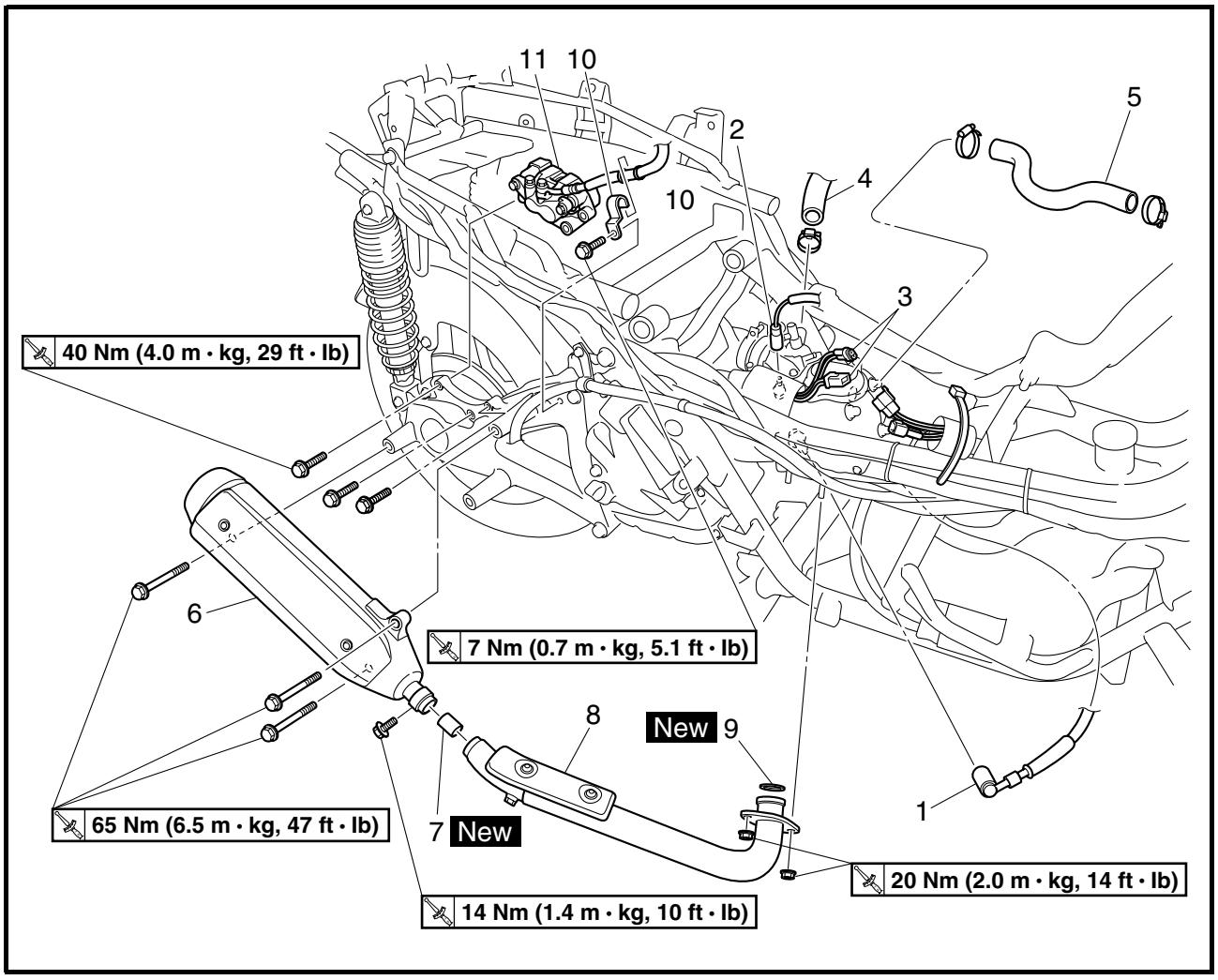
ENGINE

ENGINE REMOVAL

LEADS, HOSES, EXHAUST PIPE AND MUFFLER



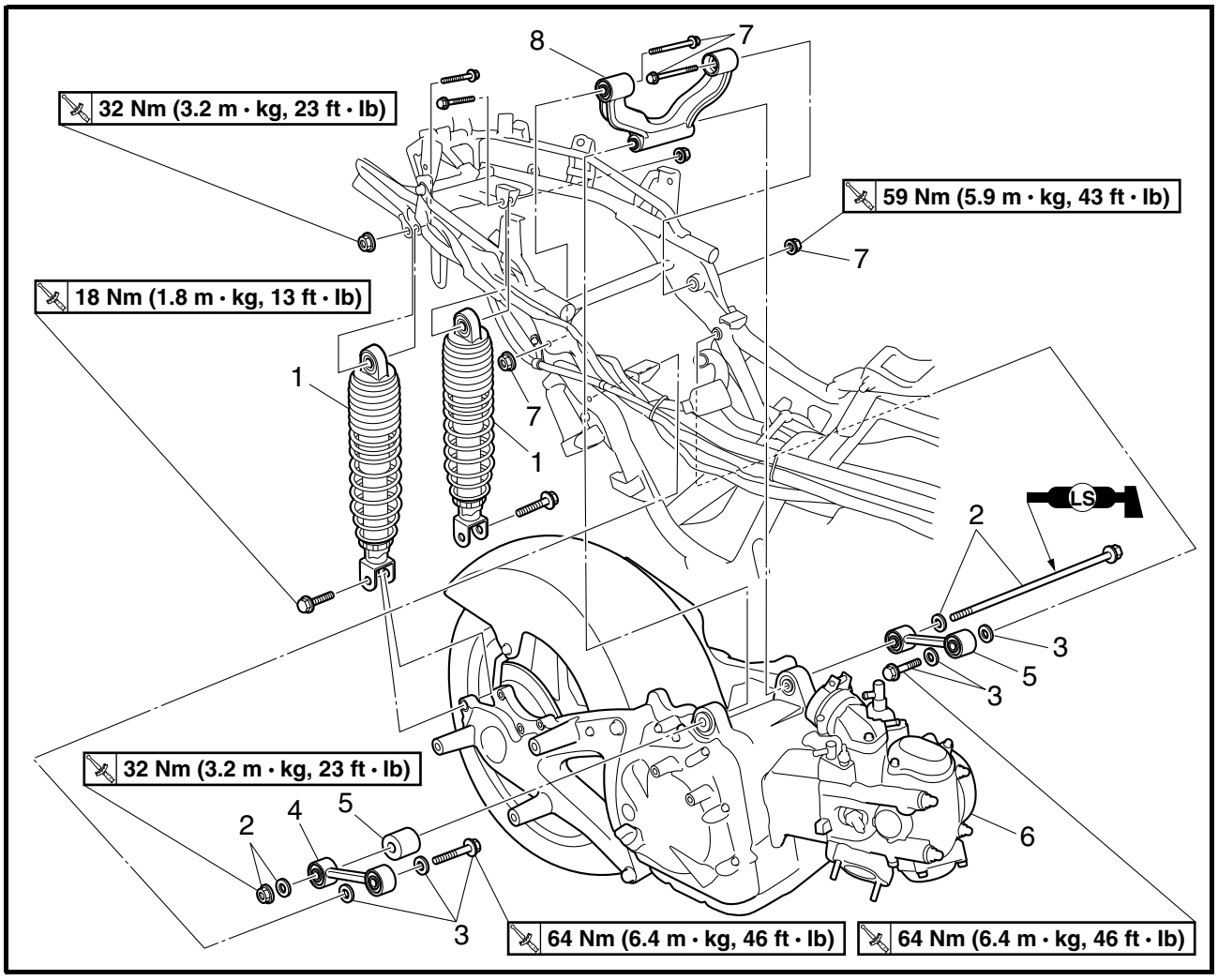
Order	Job/Part	Q'ty	Remarks
	Removing the leads, hoses, exhaust pipe and muffler		Remove the parts in the order listed.
	Seat/rear side covers/footrest board/air filter case assembly		Refer to "COVERS AND PANELS" and "AIR FILTER CASE" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
	Air cut-off valve		Refer to "AIR INDUCTION SYSTEM" in chapter 7.
	Carburetor		Refer to "CARBURETOR" in chapter 7.
	Starter motor		Refer to "STARTER MOTOR" in chapter 8.
1	Spark plug cap	1	
2	Coolant temperature sensor connector	1	Disconnect.
3	Pickup coil/stator assembly coupler	2	Disconnect.



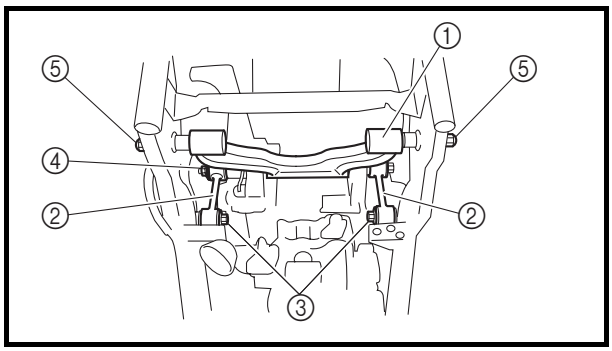
Order	Job/Part	Q'ty	Remarks
4	Thermostat outlet hose	1	Disconnect.
5	Water pump inlet hose	1	
6	Muffler	1	
7	Gasket	1	
8	Exhaust pipe	1	
9	Gasket	1	
10	Brake hose holder	1	
11	Rear brake caliper	1	
			For installation, reverse the removal procedure.

EAS00191

ENGINE



Order	Job/Part	Q'ty	Remarks
	Removing the engine		Remove the parts in the order listed. **NOTE:** Place a suitable stand under the engine.
1	Rear shock absorber	2	
2	Engine mounting nut/washer/bolt	1/2/1	
3	Engine bracket rod bolt/washer	2/4	
4	Engine bracket rod	2	Refer to "INSTALLING THE ENGINE".
5	Spacer	1	
6	Engine	1	
7	Engine bracket nut/bolt	2/2	
8	Engine bracket	1	
			For installation, reverse the removal procedure.



EAS00192
INSTALLING THE ENGINE

1. Install:
   - engine bracket ①
   - engine bracket rods ②

NOTE:
Engine bracket bolts and rod bolts should be temporarily tightened.

2. Install:
   - engine
3. Tighten:
   - engine bracket rod bolts ③

64 Nm (6.4 m · kg, 46 ft · lb)

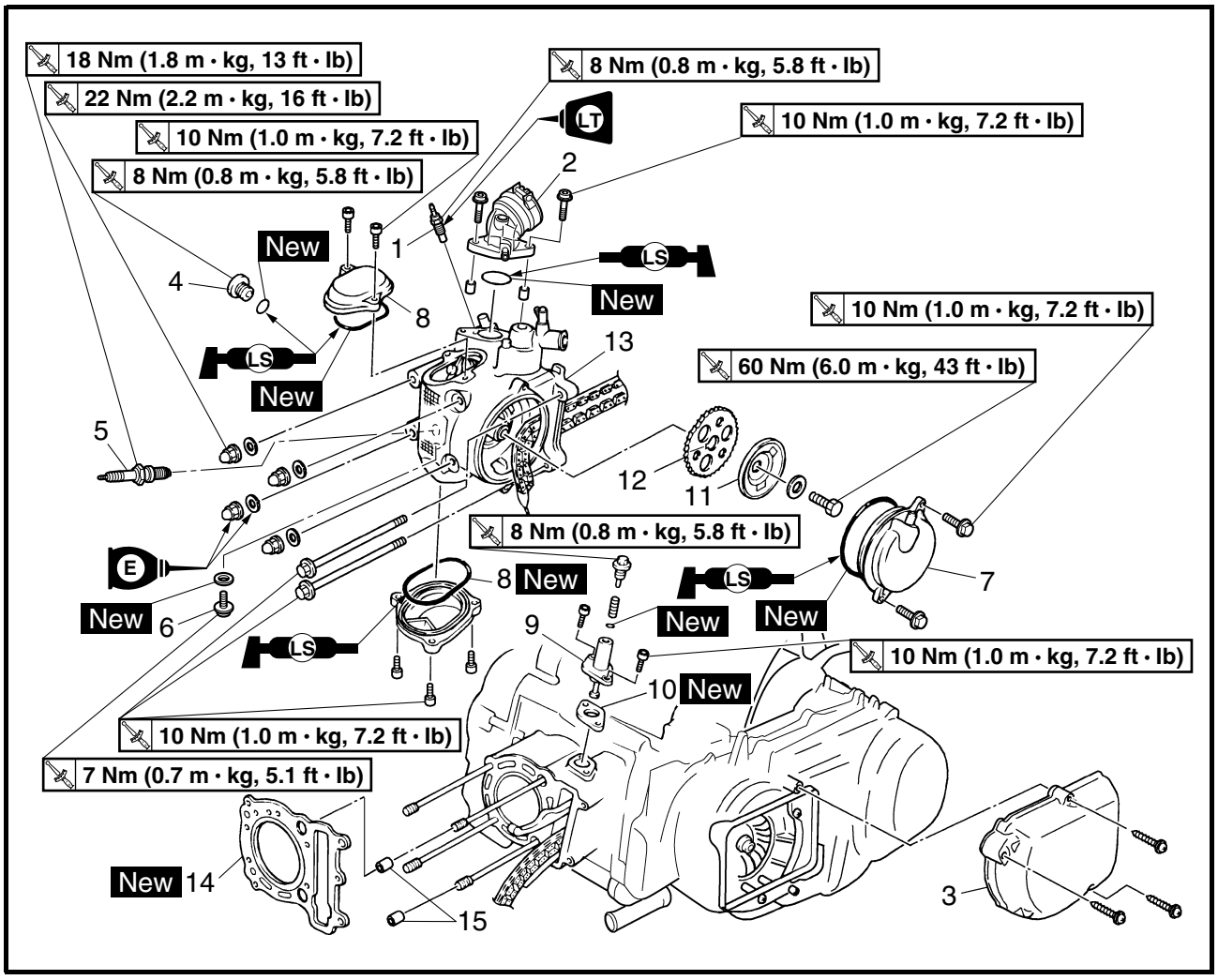
   - engine mounting nut ④

32 Nm (3.2 m · kg, 23 ft · lb)

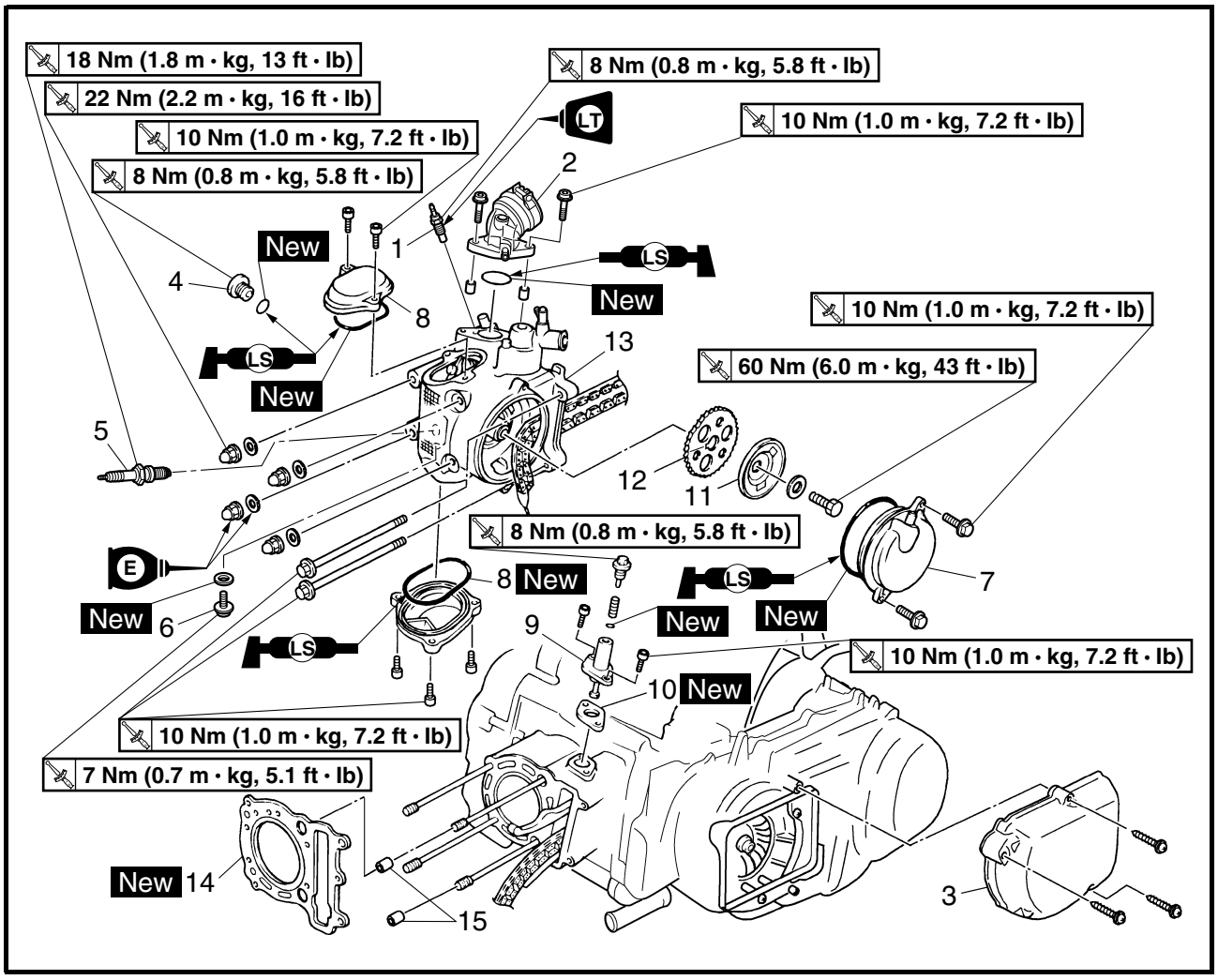
   - engine bracket nuts ⑤

59 Nm (5.9 m · kg, 43 ft · lb)

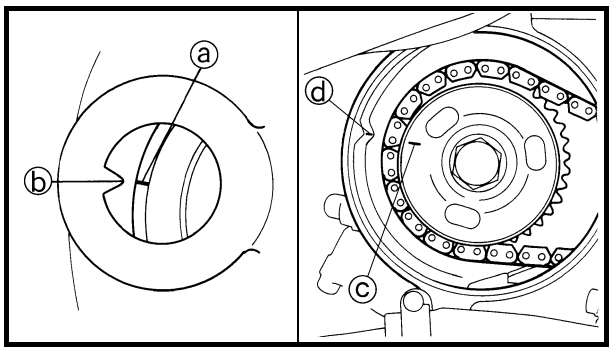
EAS00221
CYLINDER HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder head		Remove the parts in the order listed.
	Engine		Refer to "ENGINE REMOVAL".
1	Coolant temperature sensor	1	
2	Intake manifold	1	
3	V-belt case air filter cover	1	
4	Timing mark accessing plug	1	
5	Spark plug	1	
6	Oil check bolt	1	
7	Camshaft sprocket cover	1	
8	Tappet cover	2	



Order	Job/Part	Q'ty	Remarks
9	Timing chain tensioner	1	Refer to "REMOVING THE CYLINDER HEAD" and INSTALLING THE CYLINDER HEAD".
10	Timing chain tensioner gasket	1	
11	Camshaft sprocket plate	1	
12	Camshaft sprocket	1	
13	Cylinder head	1	
14	Cylinder head gasket	1	
15	Dowel pin	2	
			For installation, reverse the removal procedure.



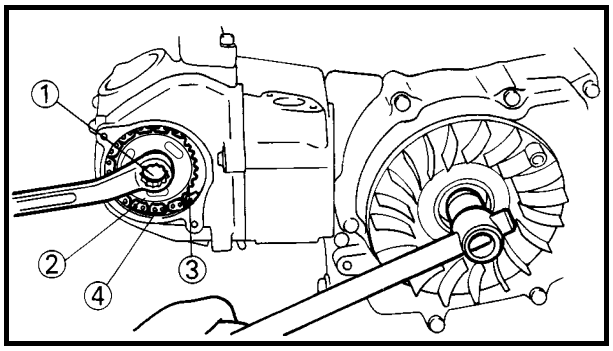
EAS00225
REMOVING THE CYLINDER HEAD

1. Remove:
   - camshaft sprocket cover
   - V-belt case air filter cover
2. Align:
   - "I" mark ⓐ on the generator rotor (with the stationary pointer ⓑ on the generator cover)

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a. Turn the primary sheave nut on the left side of the crankshaft counterclockwise to turn the crankshaft.
b. When the piston is at TDC on the compression stroke, align the "I" mark ⓒ on the camshaft sprocket with the alignment mark ⓓ on the cylinder head.

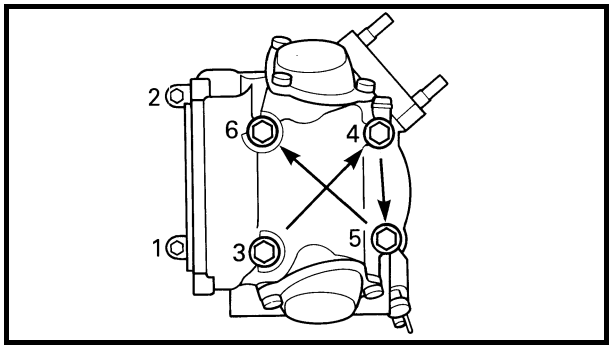
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3. Remove:
   - camshaft sprocket bolt ①
   - timing chain tensioner (along with the gasket)
   - camshaft sprocket plate ②
   - camshaft sprocket ③
   - timing chain ④

NOTE:

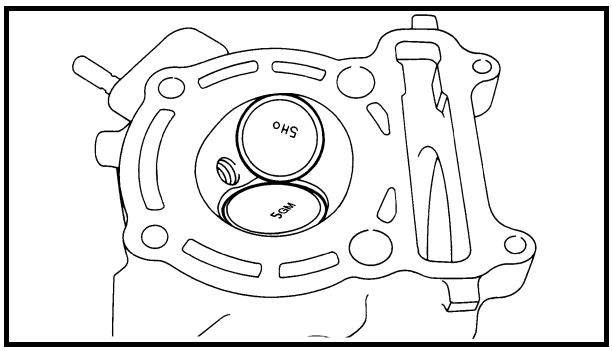
- To prevent the timing chain from falling into the crankcase, fasten it with a wire.
- While holding the primary sheave nut with a wrench, remove the camshaft sprocket bolt ①.



4. Remove:
   - cylinder head

NOTE:

- Loosen the cylinder head nuts and bolts in the proper sequence as shown.
- Loosen each cylinder head nut 1/2 of a turn at a time. After all of the cylinder head nuts are fully loosened, remove them.

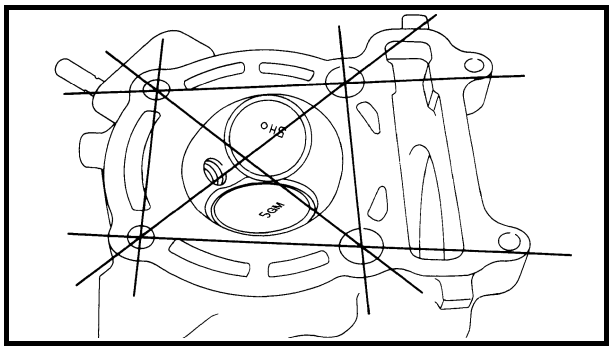


EAS00229
CHECKING THE CYLINDER HEAD

1. Eliminate:
   - combustion chamber carbon deposits (with a rounded scraper)

NOTE:
Do not use a sharp instrument to avoid damaging or scratching:
- spark plug bore threads
- valve seats

2. Check:
   - cylinder head
     Damage/scratches → Replace.
   - cylinder head water jacket
     Mineral deposits/rust → Eliminate.
3. Measure:
   - cylinder head warpage
     Out of specification → Resurface the cylinder head.



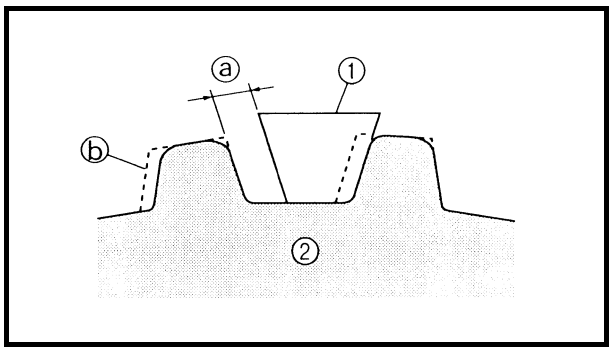
	Maximum cylinder head warpage 0.05 mm (0.0020 in)

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a. Place a straightedge and a thickness gauge across the cylinder head.
b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.
d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

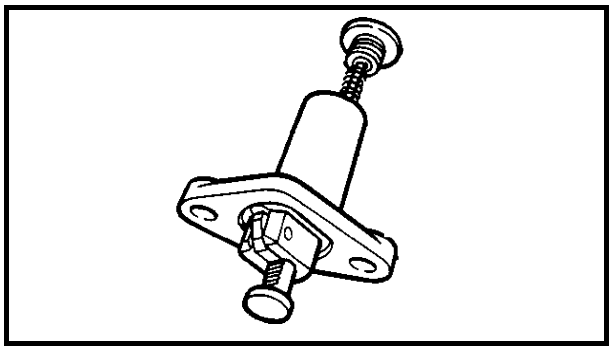
NOTE:
To ensure an even surface, rotate the cylinder head several times.

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EAS00207
CHECKING THE CAMSHAFT SPROCKET
1. Check:
   - camshaft sprocket
     More than 1/4 tooth wear ⓐ → Replace the camshaft sprocket and the timing chain as a set.

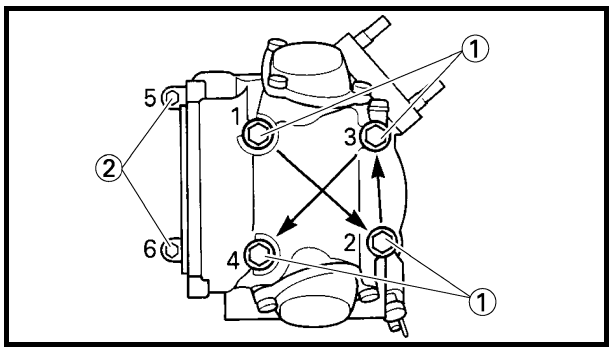
ⓐ 1/4 tooth
ⓑ Correct
① Timing chain roller
② Camshaft sprocket

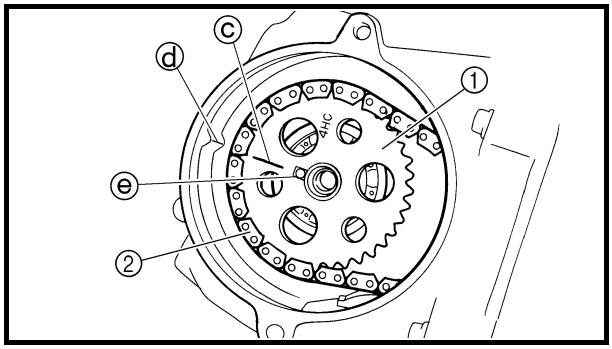


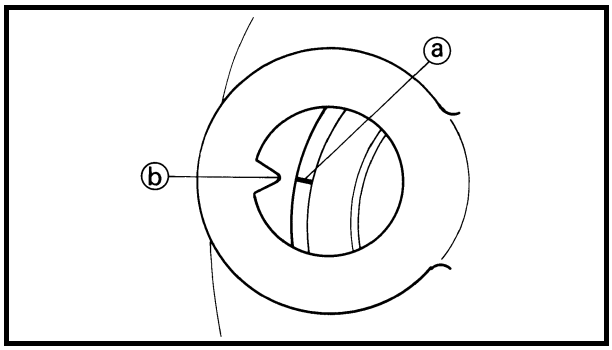
EAS00210
CHECKING THE TIMING CHAIN TENSIONER
1. Check:
   - timing chain tensioner
     Cracks/damage → Replace.
2. Check:
   - one-way cam operation
     Rough movement → Replace the timing chain tensioner housing.
3. Check:
   - cap bolt
   - spring
   - one-way cam
   - timing chain tensioner rod
     Damage/wear → Replace the defective part(s).

INSTALLING THE CYLINDER HEAD
1. Install:
   - dowel pins
   - cylinder head gasket New
2. Install:
   - cylinder head

NOTE:
Pass the timing chain through the timing chain cavity.







3. Tighten:
   - cylinder head nuts ①
     22 Nm (2.2 m · kg, 16 ft · lb)
   - cylinder head bolts ②
     10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
- Apply engine oil to the threads of the cylinder head nuts.
- Tighten the cylinder head nuts and bolts in the proper tightening sequence as shown and torque them in two stages.

4. Install:
   - camshaft sprocket ①
   - timing chain ②

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a. Turn the primary sheave nut on the left side of the crankshaft counterclockwise to turn the crankshaft.
b. Align the "I" mark ⓐ on the generator rotor with the stationary pointer ⓑ on the generator cover.
c. Align the "I" mark ⓒ on the camshaft sprocket with the stationary pointer ⓓ on the cylinder head.
d. Place the timing chain onto the camshaft sprocket, and then install the camshaft sprocket onto the camshaft.

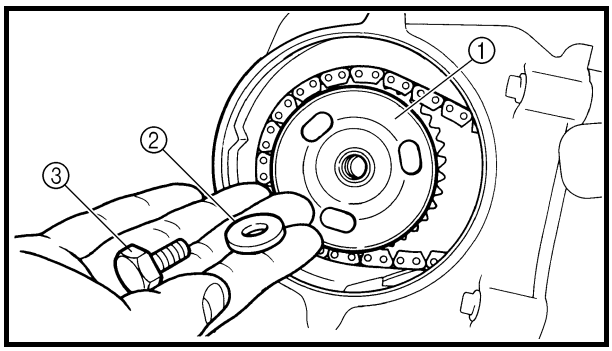
NOTE:
- When installing the camshaft sprocket, be sure to keep the timing chain as tight as possible on the exhaust side.
- Align the pin ⓔ on the camshaft with the slot in the camshaft sprocket.

CAUTION:

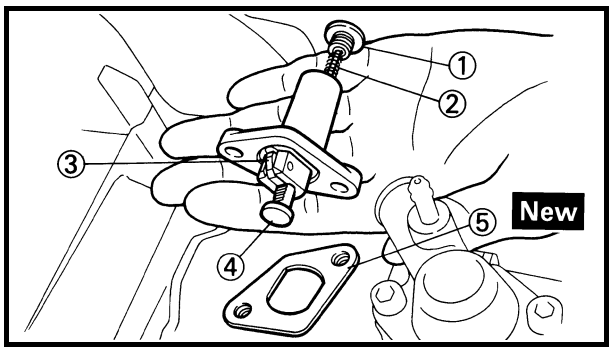
Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.

e. While holding the camshaft, temporarily tighten the camshaft sprocket bolt.
f. Remove the wire from the timing chain.

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5. Install:
   - camshaft sprocket plate ①
   - washer ②
   - camshaft sprocket bolt ③



6. Install:
   - timing chain tensioner

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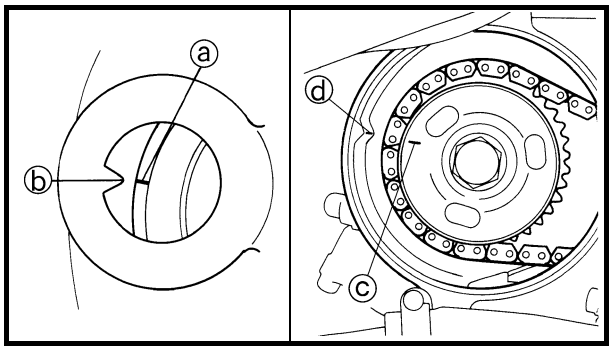
a. Remove the cap bolt ① and spring ②.
b. Release the timing chain tensioner one-way cam ③ and push the timing chain tensioner rod ④ all the way into the timing chain tensioner housing.
c. Install the timing chain tensioner and gasket ⑤ onto the cylinder.

	**Timing chain tensioner bolt** **10 Nm (1.0 m · kg, 7.2 ft · lb)**

d. Install the spring ② and cap bolt ①.

	**Timing chain tensioner cap bolt** **8 Nm (0.8 m · kg, 5.8 ft · lb)**

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7. Turn:
   - crankshaft
     (turn the primary sheave nut on the left side of the crankshaft several turns counterclockwise several times)
8. Check:
   - "I" mark
     Align the "I" mark ⓐ on the generator rotor with the stationary pointer ⓑ on the generator cover.
   - "I" mark
     Align the "I" mark ⓒ on the camshaft sprocket with the stationary pointer ⓓ on the cylinder head.
     Out of alignment → Correct.
     Refer to the installation steps above.

9. Tighten:
   • camshaft sprocket bolt

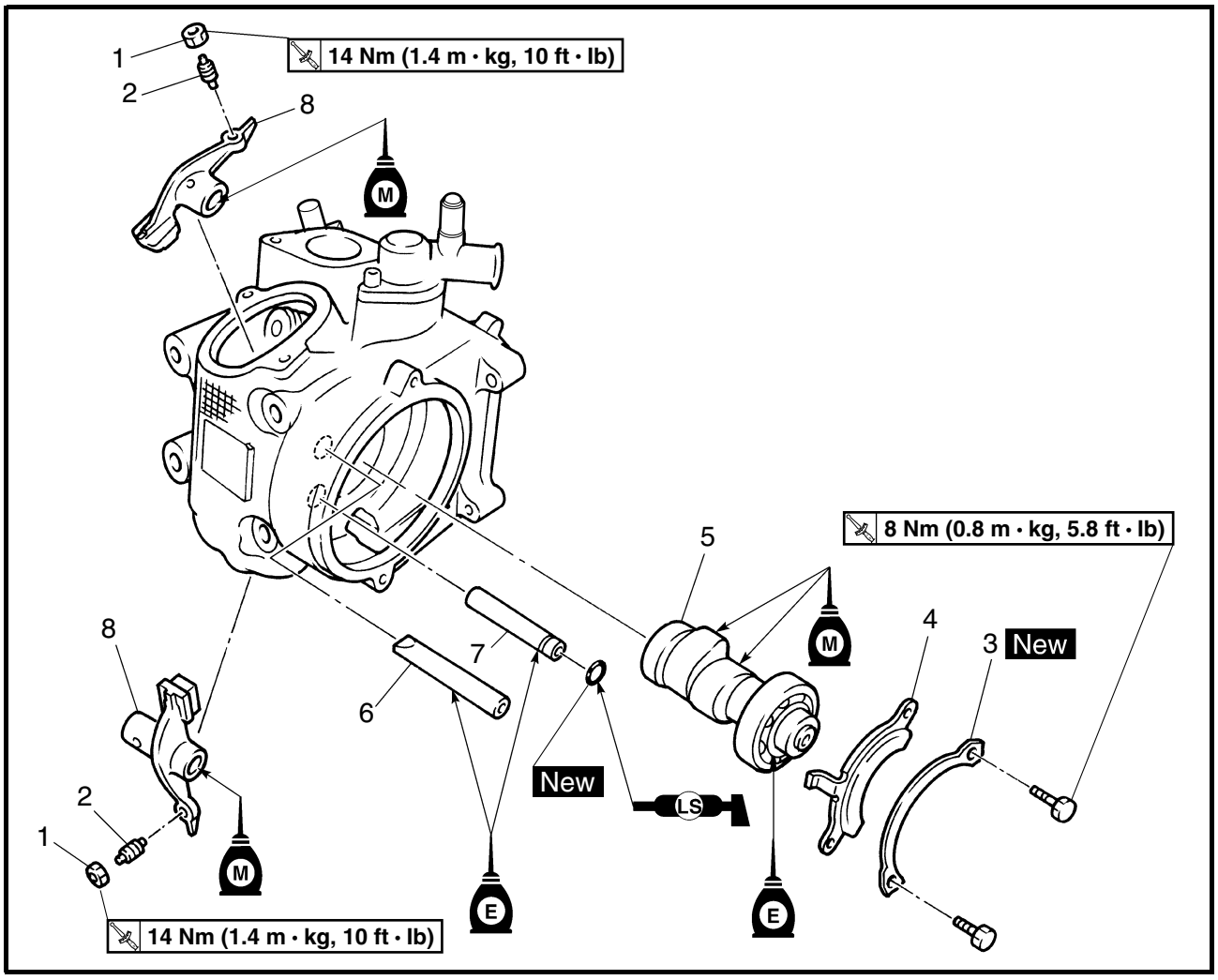
60 Nm (6.0 m · kg, 43 ft · lb)

CAUTION:

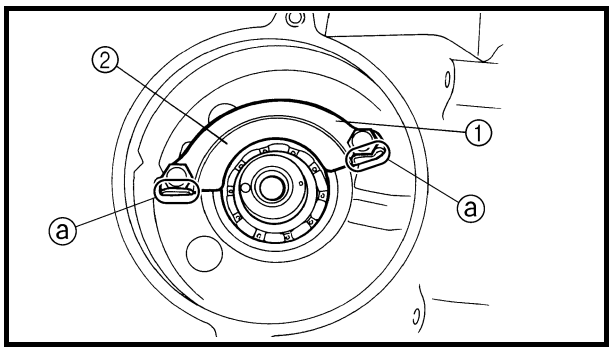
Be sure to tighten the camshaft sprocket bolt to the specified torque to avoid the possibility of the bolt coming loose and damaging the engine.

10. Measure:
   • valve clearance
   Out of specification → Adjust.
   Refer to "ADJUSTING THE VALVE CLEARANCE" in chapter 3.

EAS00195
CAMSHAFT AND ROCKER ARMS

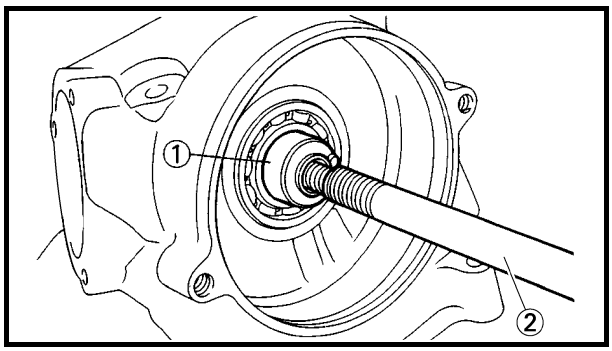


Order	Job/Part	Q'ty	Remarks
	Removing the camshaft and rocker arms		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Locknut	2	Loosen.
2	Adjusting screw	2	Loosen.
3	Lock plate	1	Refer to "REMOVING THE ROCKER ARMS AND CAMSHAFT" and "INSTALLING THE CAMSHAFT AND ROCKER ARMS".
4	Camshaft retainer	1	
5	Camshaft	1	
6	Intake rocker arm shaft	1	
7	Exhaust rocker arm shaft	1	
8	Rocker arm	2	
			For installation, reverse the removal procedure.



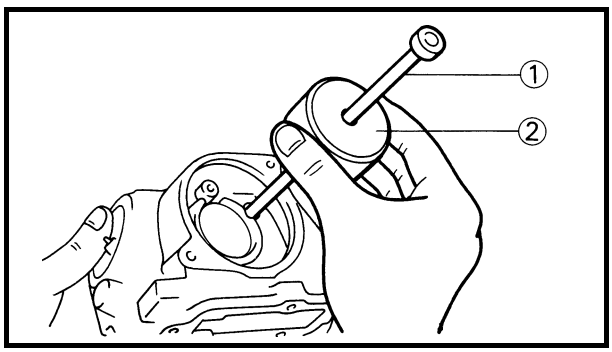
EAS00202
REMOVING THE ROCKER ARMS AND CAMSHAFT

1. Straighten the lock plate tabs ⓐ.
2. Remove:
   - lock plate ①
   - camshaft retainer ②



3. Remove:
   - camshaft ①

NOTE:
Screw a 10 mm bolt ② into the threaded end of the camshaft, and then pull the camshaft out.

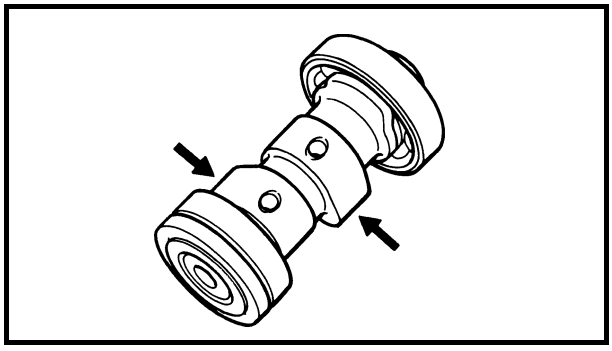


4. Remove:
   - intake rocker arm shaft
   - exhaust rocker arm shaft
   - rocker arms

NOTE:
Remove the rocker arm shafts with the slide hammer bolt ① and weight ②.

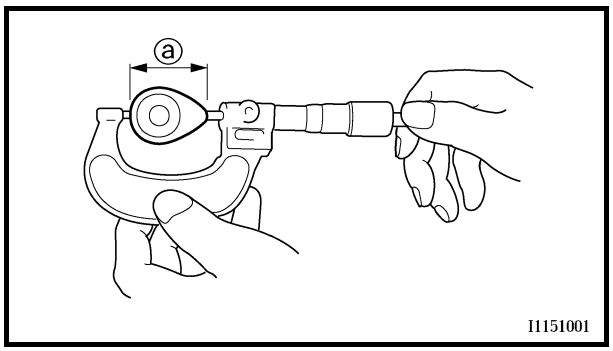


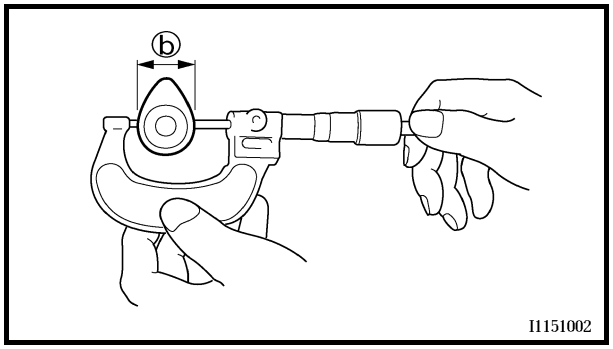
Slide hammer bolt
90890-01083
Weight
90890-01084

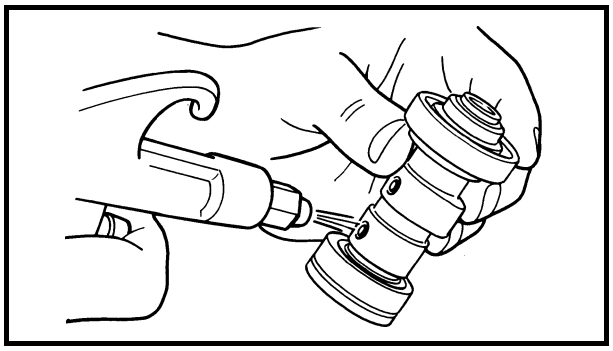


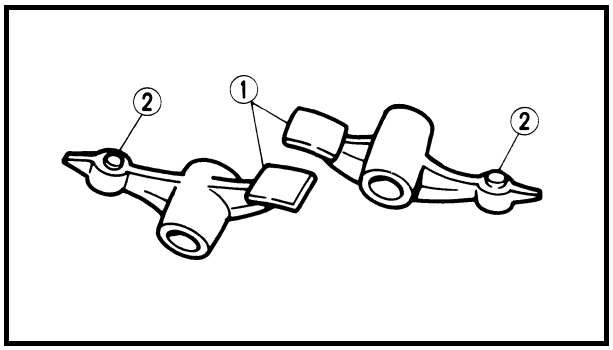
EAS00205
CHECKING THE CAMSHAFT

1. Check:
   - camshaft lobes
     Blue discoloration/pitting/scratches → Replace the camshaft.









2. Measure:
   - camshaft lobe dimensions ⓐ and ⓑ
     Out of specification → Replace the camshaft.

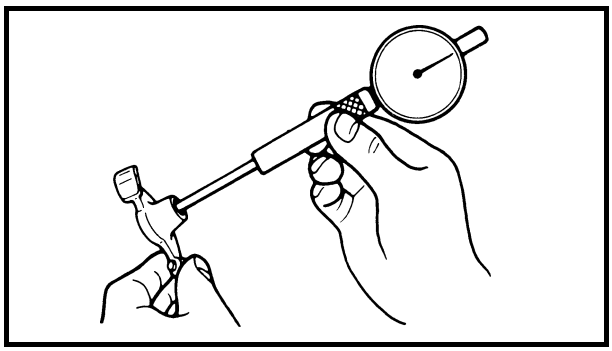
Camshaft lobe dimensions
Intake
ⓐ 37.051 ~ 37.151 mm (1.4587 ~ 1.4626 in)
<Limit>: 36.956 mm (1.4550 in)
ⓑ 30.074 ~ 30.174 mm (1.1840 ~ 1.1880 in)
<Limit>: 29.973 mm (1.1800 in)
Exhaust
ⓐ 37.053 ~ 37.153 mm (1.4588 ~ 1.4627 in)
<Limit>: 36.956 mm (1.4550 in)
ⓑ 30.091 ~ 30.191 mm (1.1847 ~ 1.1886 in)
<Limit>: 29.194 mm (1.1494 in)

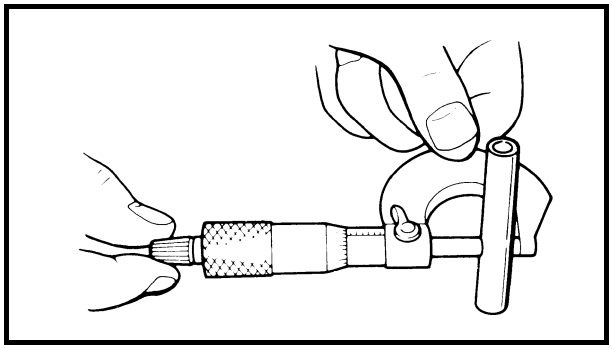
3. Check:
   - camshaft oil passage
     Obstruction → Blow out with compressed air.

EAS00206
CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

The following procedure applies to all of the rocker arms and rocker arm shafts.

1. Check:
   - rocker arm (camshaft lobe contact surface ①)
   - adjusting screw surface ②
     Damage/wear → Replace.
2. Check:
   - rocker arm shaft
     Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.





3. Measure:
   • rocker arm inside diameter
   Out of specification → Replace.

Rocker arm inside diameter
12.000 ~ 12.018 mm
(0.4724 ~ 0.4731 in)
<Limit>: 12.030 mm (0.4736 in)

4. Measure:
   • rocker arm shaft outside diameter
   Out of specification → Replace.

Rocker arm shaft outside diameter
11.981 ~ 11.991 mm
(0.4717 ~ 0.4721 in)
<Limit>: 11.950 mm (0.4705 in)

5. Calculate:
   • rocker-arm-to-rocker-arm-shaft clearance
   Above 0.080 mm (0.0031 in) → Replace the defective part(s).

NOTE:
Calculate the clearance by subtracting the rocker arm shaft outside diameter from the rocker arm inside diameter.

Rocker-arm-to-rocker-arm-shaft clearance
0.009 ~ 0.037 mm
(0.0004 ~ 0.0015 in)
<Limit>: 0.080 mm (0.0031 in)

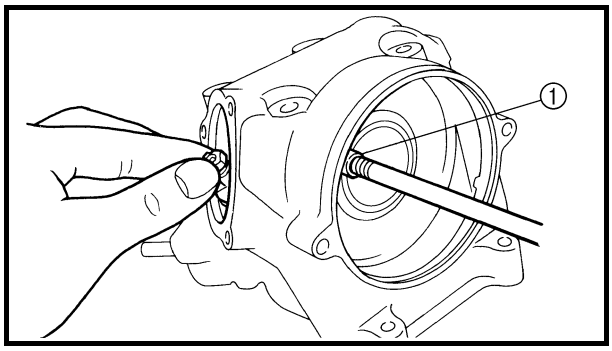
EAS00220
INSTALLING THE CAMSHAFT AND ROCKER ARMS

1. Lubricate:
   • camshaft

	Recommended lubricant **Camshaft** **Molybdenum disulfide oil** **Camshaft bearing** **Engine oil**

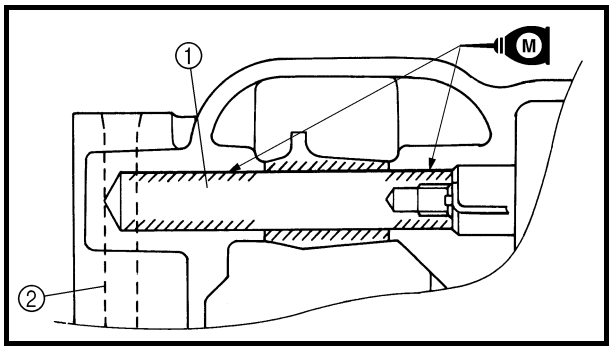
2. Lubricate:
   • rocker arms

	Recommended lubricant **Molybdenum disulfide oil**



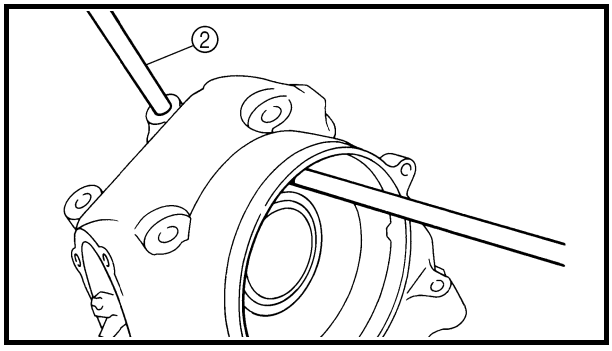
3. Install:
   • exhaust rocker arm
   • exhaust rocker arm shaft ①

NOTE:
Make sure the exhaust rocker arm shaft is completely pushed into the cylinder head.

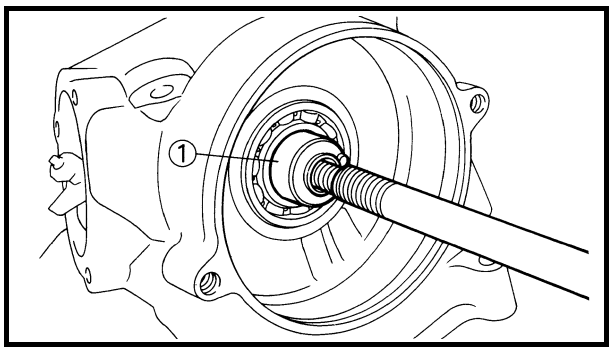


4. Install:
   • intake rocker arm
   • intake rocker arm shaft ①

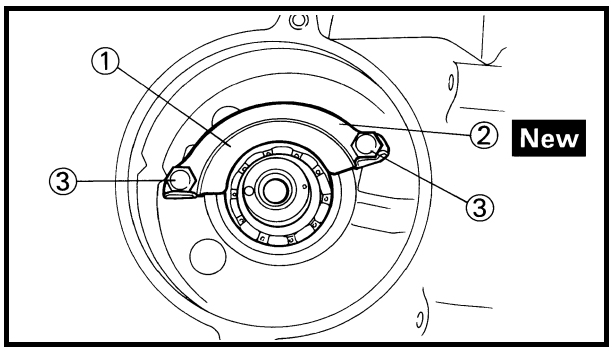
NOTE:
Insert a guide shaft (8 mm) ② into the stud bolt hole in the cylinder head and install the intake rocker arm shaft as shown.



CAUTION:
Make sure the threaded part of the rocker arm shaft faces out.



5. Install:
   • camshaft ①

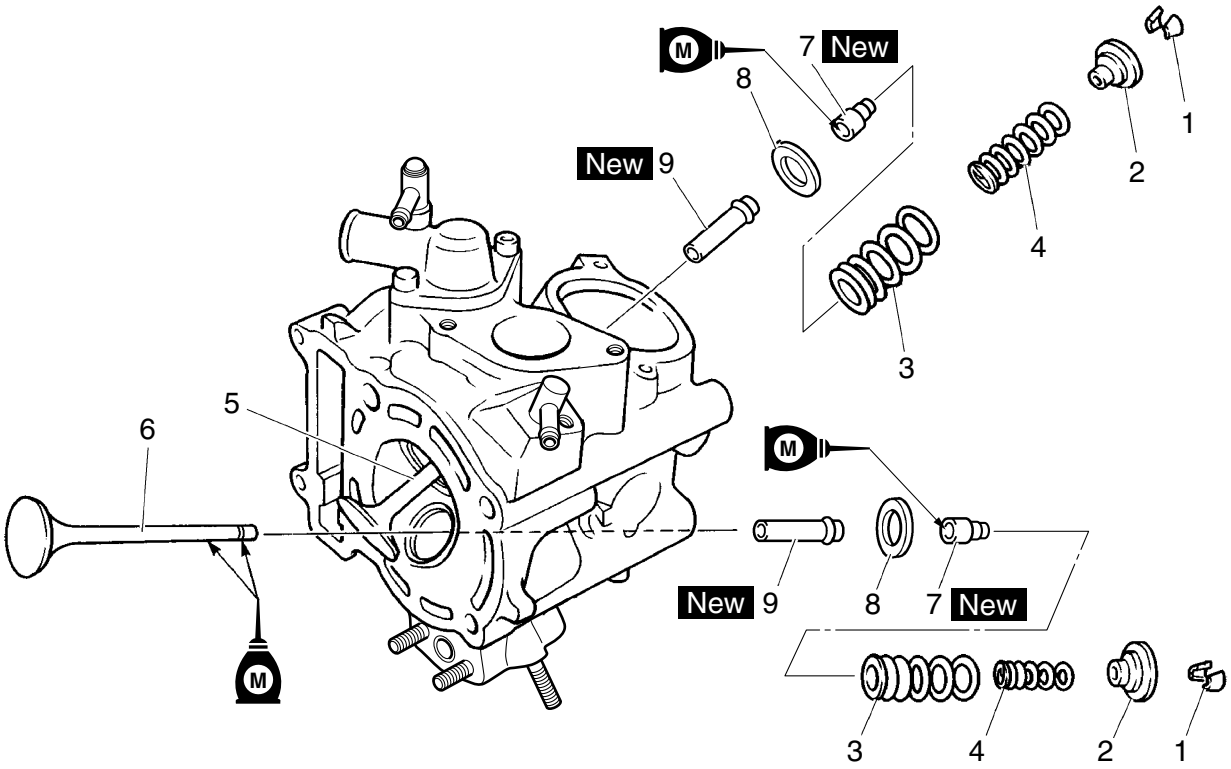


6. Install:
   • camshaft retainer ①
   • lock plate ② New
   • camshaft retainer bolts ③

	8 Nm (0.8 m · kg, 5.8 ft · lb)

NOTE:
Bend the lock plate tab along a flat side of the camshaft retainer bolts ③.

EAS00236
VALVES AND VALVE SPRINGS



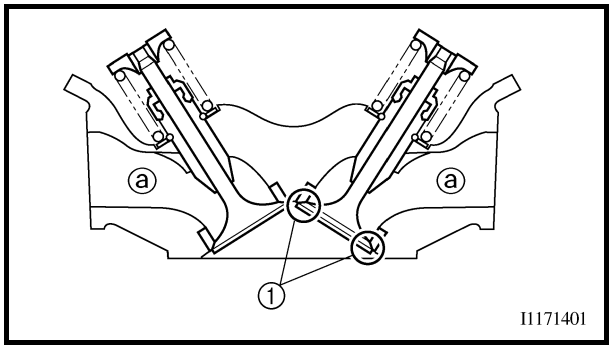
Order	Job/Part	Q'ty	Remarks
	Removing the valves and valve springs		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
	Rocker arms and camshaft		Refer to "CAMSHAFT AND ROCKER ARMS".
1	Valve cotter	4	Refer to "REMOVING THE VALVES" and "INSTALLING THE VALVES".
2	Upper spring seat	2	
3	Outer valve spring	2	
4	Inner valve spring	2	
5	Intake valve	1	
6	Exhaust valve	1	
7	Valve stem seal	2	
8	Lower spring seat	2	
9	Valve guide	2	
			For installation, reverse the removal procedure.

EAS00237
REMOVING THE VALVES

The following procedure applies to all of the valves and related components.

NOTE:

Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.



1. Check:
   - valve sealing
     Leakage at the valve seat → Check the valve face, valve seat, and valve seat width. Refer to "CHECKING THE VALVE SEATS".

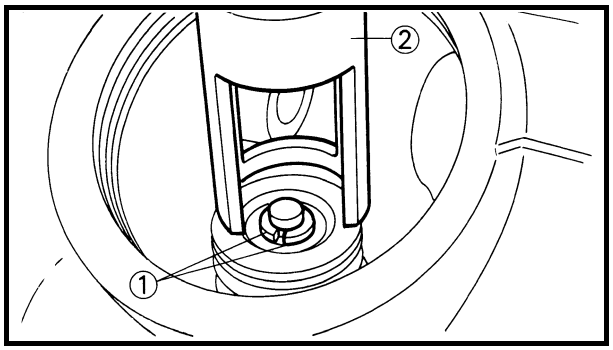
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a. Pour a clean solvent into the intake and exhaust ports ⓐ.
b. Check that the valves properly seal.

NOTE:

There should be no leakage at the valve seat ①.

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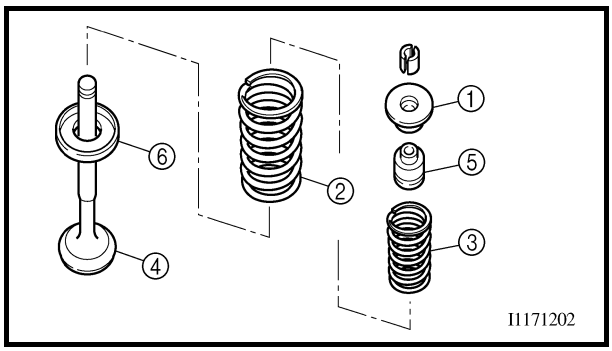
2. Remove:
   - valve cotters ①

NOTE:

Remove the valve cotters by compressing the valve spring with the valve spring compressor and the valve spring compressor attachment ②.

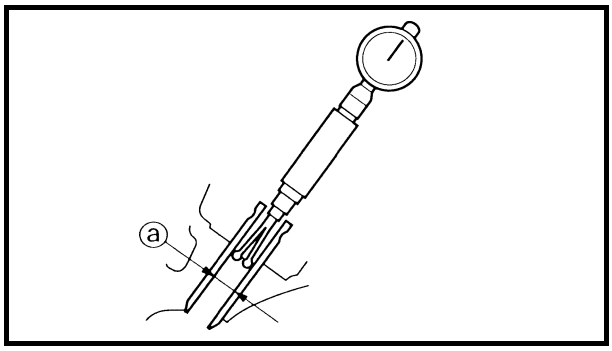


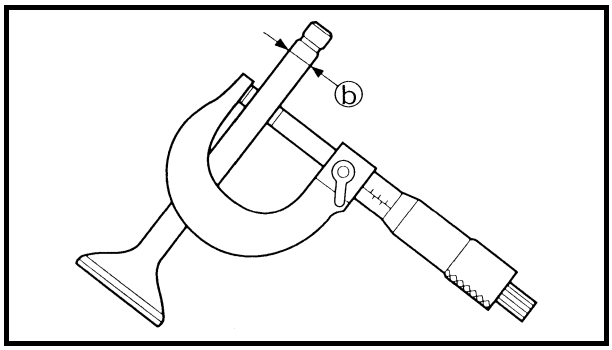
Valve spring compressor
90890-04019
Valve spring compressor attachment
90890-04108



3. Remove:
   - upper spring seat ①
   - outer valve spring ②
   - inner valve spring ③
   - valve ④
   - valve stem seal ⑤
   - lower spring seat ⑥

NOTE:
Identify the position of each part very carefully so that they can be reinstalled in their original place.





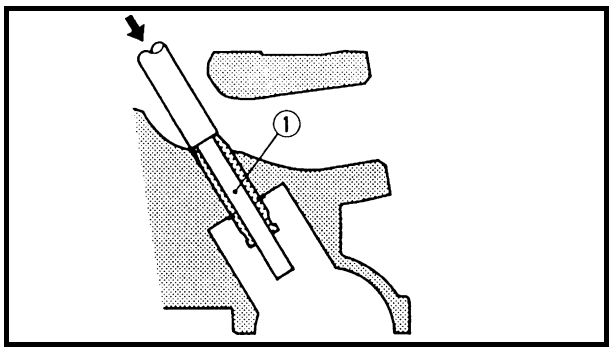
EAS00239
CHECKING THE VALVES AND VALVE GUIDES

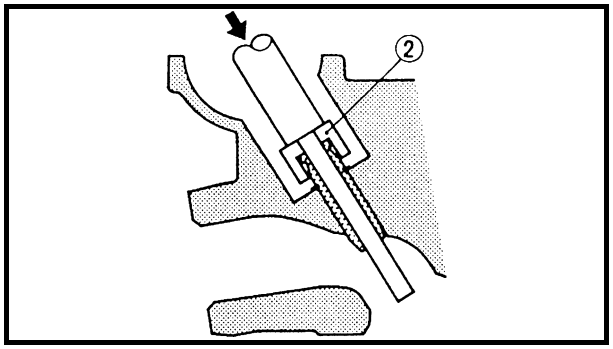
The following procedure applies to all of the valves and valve guides.

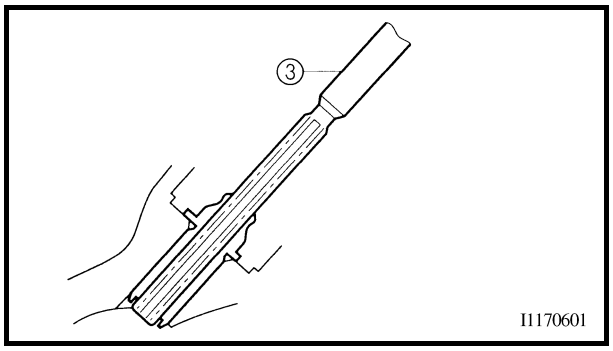
1. Measure:
   - valve-stem-to-valve-guide clearance
     Out of specification → Replace the valve guide.

Valve-stem-to-valve-guide clearance =
Valve guide inside diameter ⓐ –
Valve stem diameter ⓑ

Valve-stem-to-valve-guide clearance
Intake
0.010 ~ 0.037 mm
(0.0004 ~ 0.0015 in)
<Limit>: 0.080 mm (0.0031 in)
Exhaust
0.025 ~ 0.052 mm
(0.0010 ~ 0.0020 in)
<Limit>: 0.100 mm (0.0039 in)







2. Replace:
   • valve guide

NOTE:
To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100 °C (212 °F) in an oven.

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a. Remove the valve guide with the valve guide remover ①.
b. Install the new valve guide with the valve guide installer ② and valve guide remover ①.
c. After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.

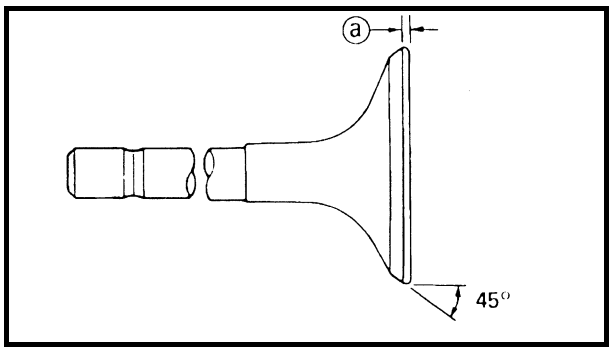
NOTE:
After replacing the valve guide, reface the valve seat.



Valve guide remover (ø6)
90890-04064
Valve guide installer (ø6)
90890-04065
Valve guide reamer (ø6)
90890-04066

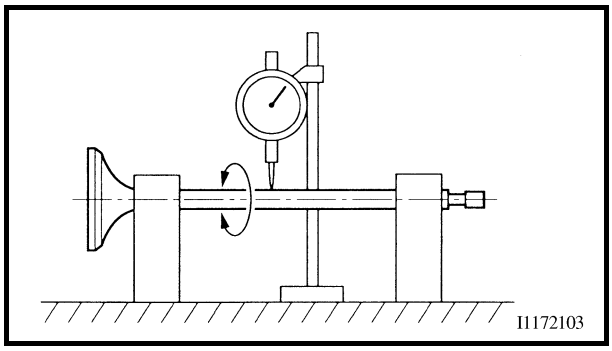
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3. Eliminate:
   • carbon deposits
   (from the valve face and valve seat)
4. Check:
   • valve face
   Pitting/wear → Grind the valve face.
   • valve stem end
   Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.



5. Measure:
   • valve margin thickness ⓐ
     Out of specification → Replace the valve.

Valve margin thickness
Intake
0.80 ~ 1.20 mm
(0.0315 ~ 0.0472 in)
<Limit> 0.5 mm (0.02 in)
Exhaust
0.80 ~ 1.20 mm
(0.0315 ~ 0.0472 in)
<Limit> 0.5 mm (0.02 in)



6. Measure:
   • valve stem runout
     Out of specification → Replace the valve.

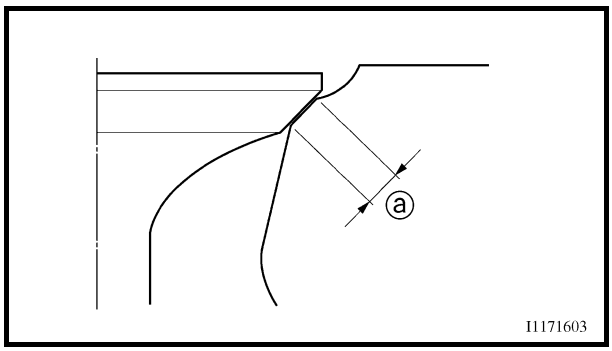
NOTE:
- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal.

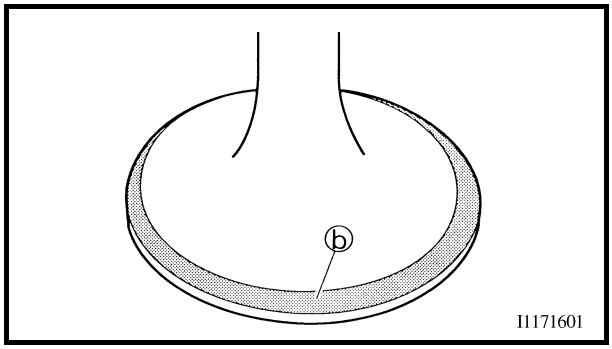
Valve stem runout
0.010 mm (0.0004 in)

EAS00240
CHECKING THE VALVE SEATS

The following procedure applies to all of the valves and valve seats.

1. Eliminate:
   • carbon deposits
     (from the valve face and valve seat)





2. Check:
   - valve seat
     Pitting/wear → Replace the cylinder head.
3. Measure:
   - valve seat width ⓐ
     Out of specification → Replace the cylinder head.

Valve seat width
Intake
0.90 ~ 1.10 mm
(0.0354 ~ 0.0433 in)
<Limit>: 1.6 mm (0.06 in)
Exhaust
0.90 ~ 1.10 mm
(0.0354 ~ 0.0433 in)
<Limit>: 1.6 mm (0.06 in)

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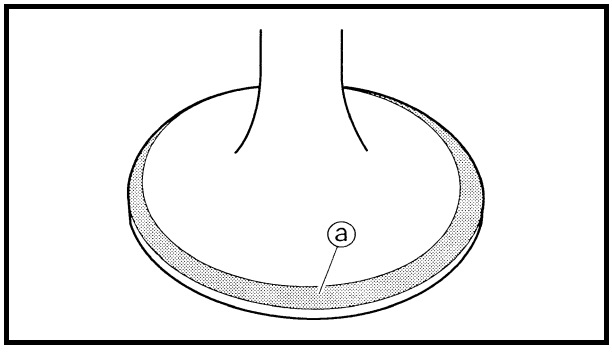
a. Apply Mechanic's blueing dye (Dykem) ⓑ to the valve face.
b. Install the valve into the cylinder head.
c. Press the valve through the valve guide and onto the valve seat to make a clear impression.
d. Measure the valve seat width.

NOTE:
Where the valve seat and valve face contacted one another, the blueing will have been removed.

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4. Lap:
   - valve face
   - valve seat

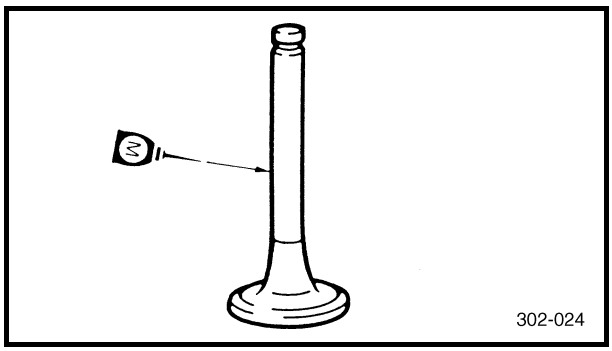
NOTE:
After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.

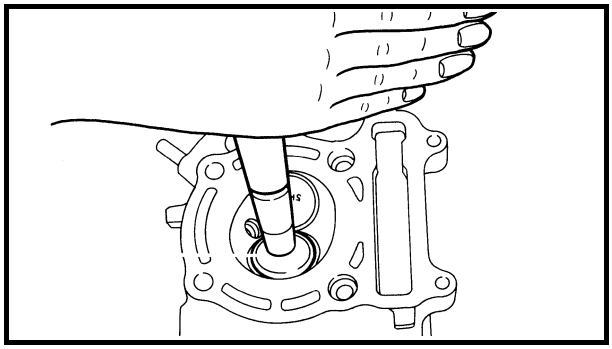


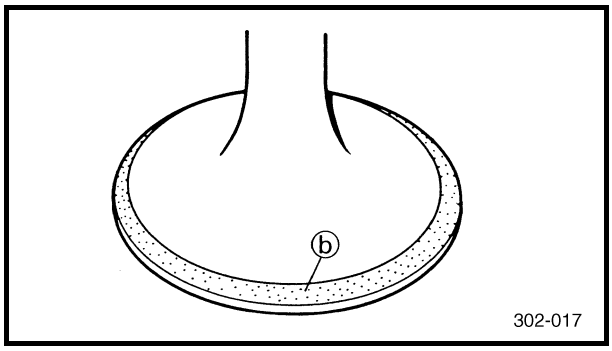
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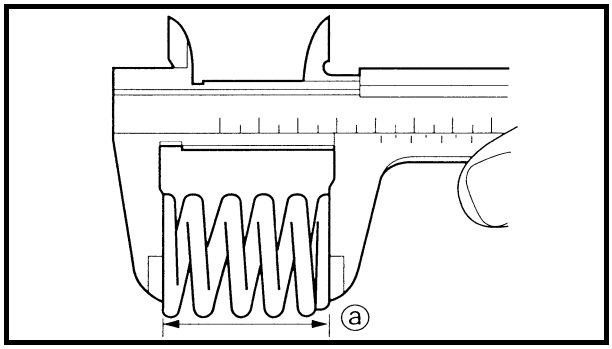
a. Apply a coarse lapping compound ⓐ to the valve face.

CAUTION:
Do not let the lapping compound enter the gap between the valve stem and the valve guide.









b. Apply molybdenum disulfide oil to the valve stem.
c. Install the valve into the cylinder head.
d. Turn the valve until the valve face and valve seat are evenly polished, and then clean off all of the lapping compound.

NOTE:
For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

e. Apply a fine lapping compound to the valve face and repeat the above steps.
f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
g. Apply Mechanic's blueing dye (Dykem) ⓑ to the valve face.
h. Install the valve into the cylinder head.
i. Press the valve through the valve guide and onto the valve seat to make a clear impression.
j. Measure the valve seat width again. If the valve seat width is out of specification, reface and lap the valve seat.

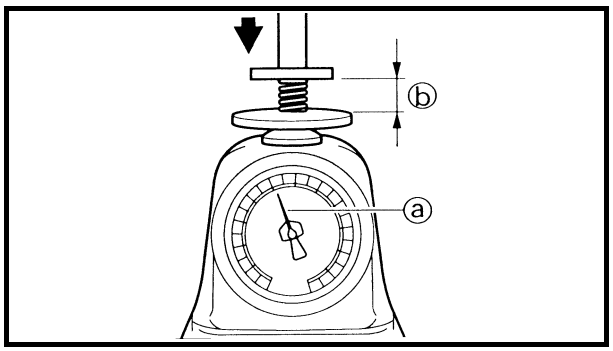
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EAS00241
CHECKING THE VALVE SPRINGS

The following procedure applies to all of the valve springs.

1. Measure:
   - valve spring free length ⓐ
     Out of specification → Replace the valve spring.

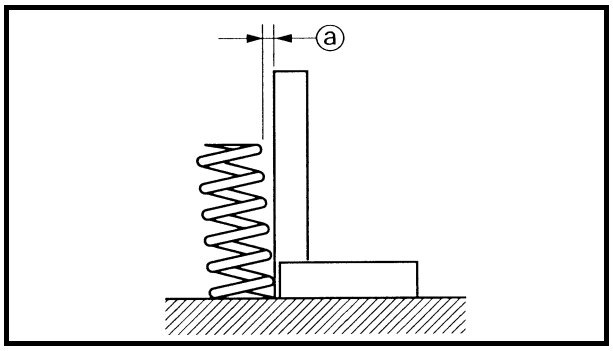
Valve spring free length
Intake and exhaust inner valve spring
38.10 mm (1.50 in)
<Limit>: 36.10 mm (1.42 in)
Intake and exhaust outer valve spring
36.93 mm (1.45 in)
<Limit>: 35.00 mm (1.38 in)



2. Measure:
   • compressed valve spring force ⓐ
     Out of specification → Replace the valve spring.

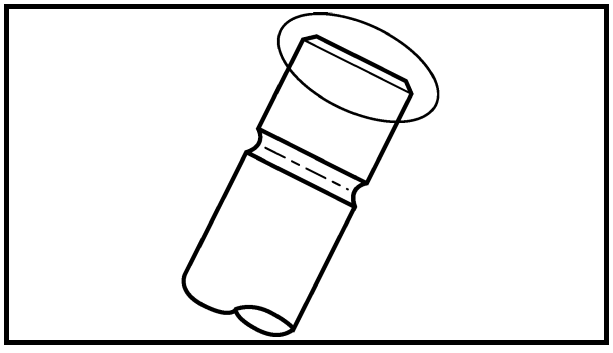
ⓑ Installed length

Compressed valve spring force (installed)
Intake and exhaust inner valve spring
76 ~ 88 N
(7.80 ~ 9.00 kg, 17.20 ~ 19.85 lb)
at 30.10 mm (1.19 in)
Intake and exhaust outer valve spring
115 ~ 133 N
(11.73 ~ 13.56 kg,
25.85 ~ 29.90 lb) at 31.60 mm
(1.24 in)



3. Measure:
   • valve spring tilt ⓐ
     Out of specification → Replace the valve spring.

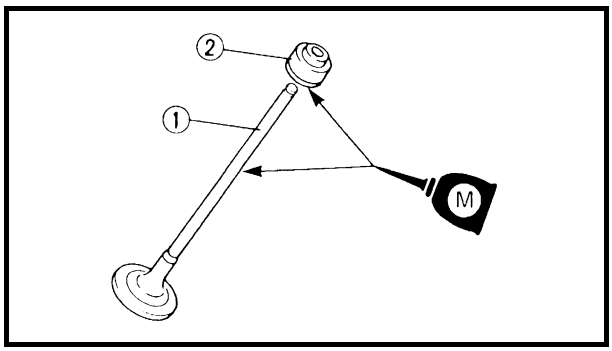
Valve spring tilt limit
Intake and exhaust inner valve spring
2.5°/1.7 mm (0.067 in)
Intake and exhaust outer valve spring
2.5°/1.6 mm (0.063 in)



EAS00245
INSTALLING THE VALVES

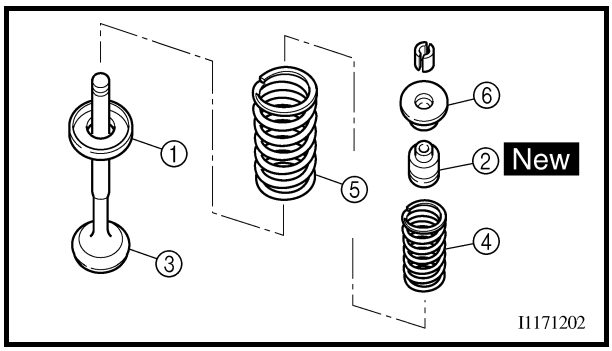
The following procedure applies to all of the valves and related components.

1. Deburr:
   • valve stem end
     (with an oil stone)



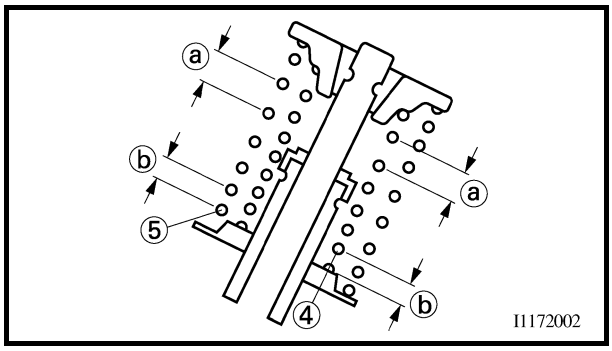
2. Lubricate:
   - valve stem ①
   - valve stem seal ②
   (with the recommended lubricant)

	Recommended lubricant **Molybdenum disulfide oil**

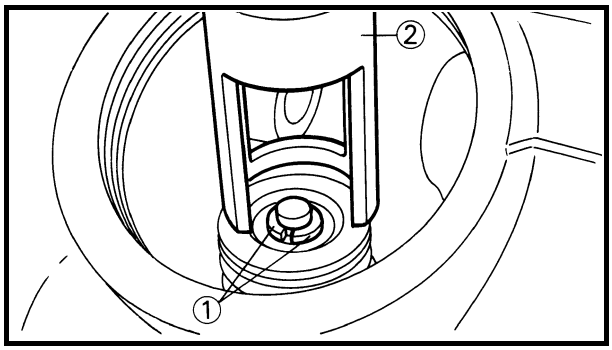


3. Install:
   - lower spring seat ①
   - valve stem seal ② New
   - valve ③
   - inner valve spring ④
   - outer valve spring ⑤
   - upper spring seat ⑥

NOTE:
Install the valve spring with the larger pitch ⓐ facing up.



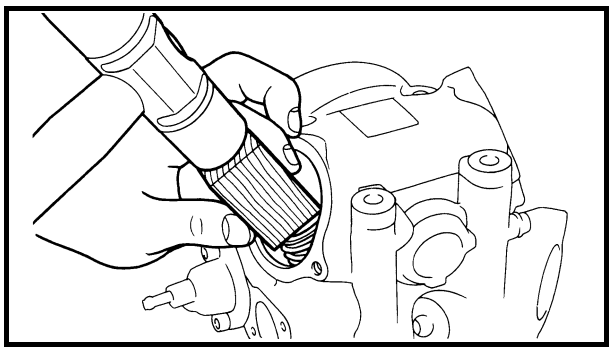
ⓑ Smaller pitch



4. Install:
   - valve cotters ①

NOTE:
Install the valve cotters by compressing the valve spring with the valve spring compressor and the valve spring compressor attachment ②.

	Valve spring compressor **90890-04019** **Valve spring compressor attachment** **90890-04108**

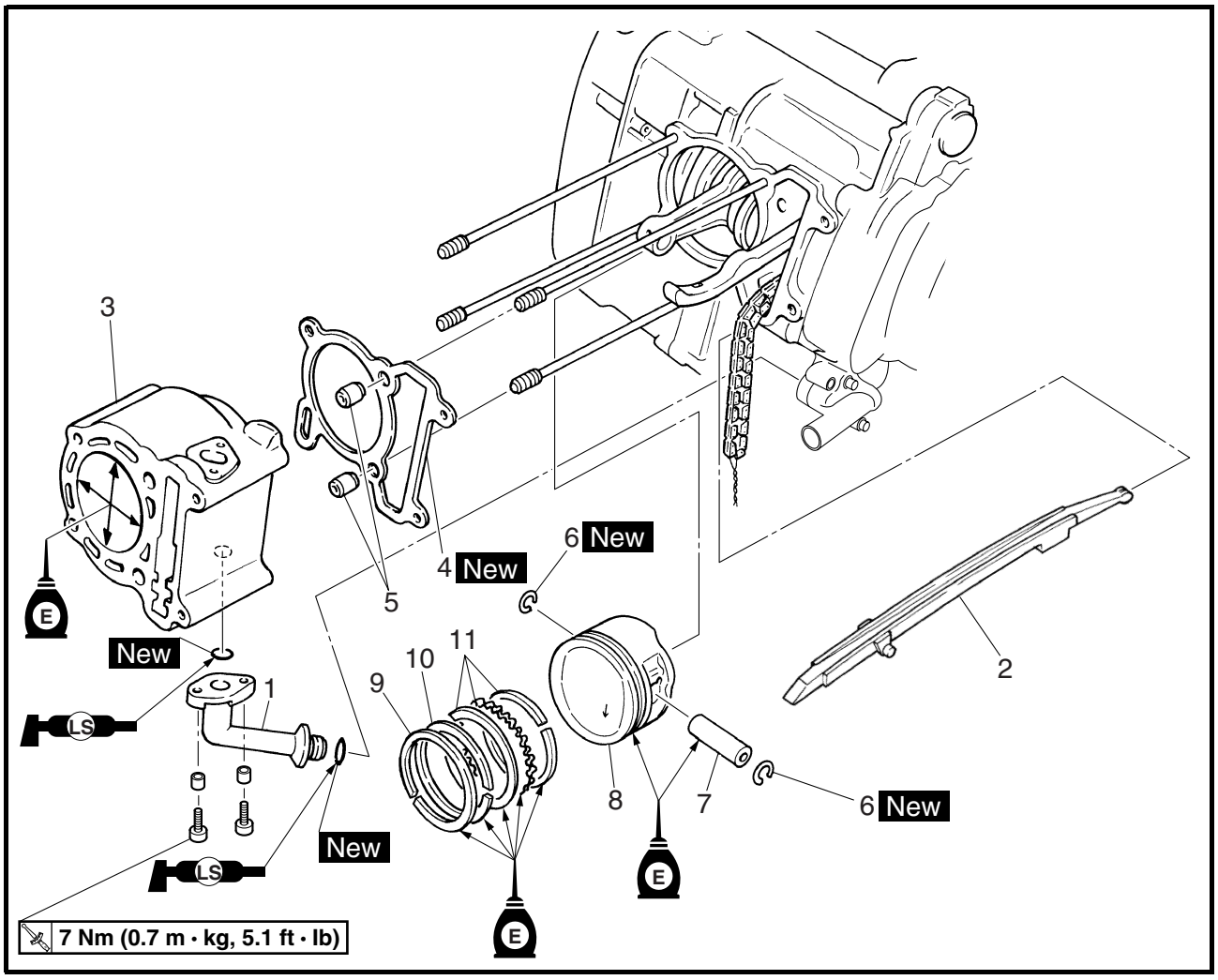


5. To secure the valve cotters onto the valve stem, lightly tap the valve tip with a soft face hammer.

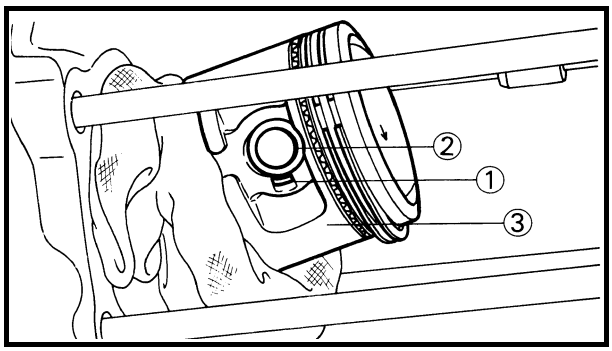
CAUTION:

Hitting the valve tip with excessive force could damage the valve.

EAS00251
CYLINDER AND PISTON



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder and piston		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Water pump outlet pipe	1	
2	Timing chain guide (exhaust side)	1	
3	Cylinder	1	
4	Cylinder gasket	1	Refer to "INSTALLING THE PISTON AND CYLINDER".
5	Dowel pin	2	
6	Piston pin clip	2	
7	Piston pin	1	Refer to "REMOVING THE PISTON" and "INSTALLING THE PISTON AND CYLINDER".
8	Piston	1	
9	Top ring	1	
10	2nd ring	1	
11	Oil ring	1	
			For installation, reverse the removal procedure.

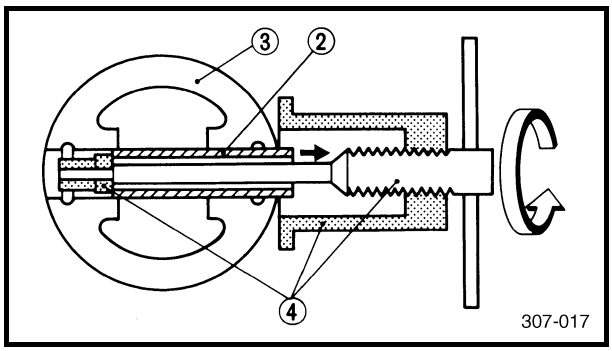


EAS00253
REMOVING THE PISTON

1. Remove:
   - piston pin clips ①
   - piston pin ②
   - piston ③

CAUTION:

Do not use a hammer to drive the piston pin out.

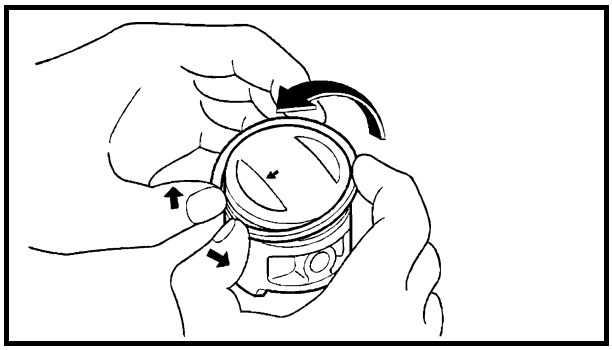


NOTE:

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip groove and the piston pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set ④.



Piston pin puller set
90890-01304



2. Remove:
   - top ring
   - 2nd ring
   - oil ring

NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

EAS00259
CHECKING THE CYLINDER AND PISTON

1. Check:
   - piston wall
   - cylinder wall

     Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.

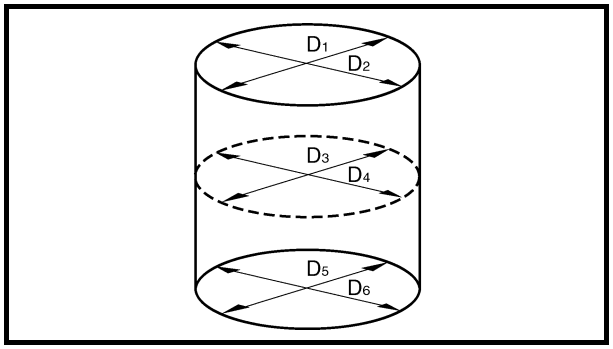
2. Measure:
   • piston-to-cylinder clearance

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a. Measure cylinder bore "C" with the cylinder bore gauge.

NOTE:

Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.



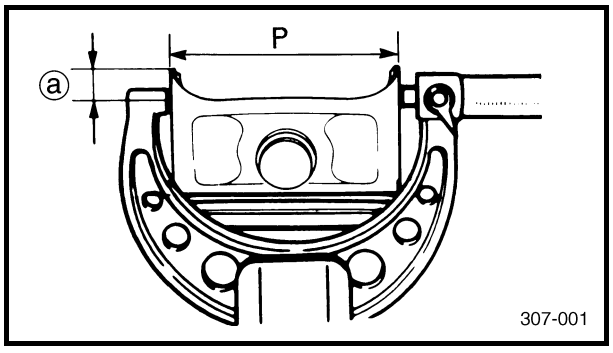
Cylinder bore "C"	**69.000 ~ 69.005 mm (2.7165 ~ 2.7167 in)**
Taper limit "T"	**0.050 mm (0.0020 in)**
Out of round "R"	**0.030 mm (0.0012 in)**

"C" = maximum of D_1 ~ D_2
"T" = maximum of D_1 or D_2 – maximum of D_5 or D_6
"R" = maximum of D_1, D_3 or D_5 – minimum of D_2, D_4 or D_6

b. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

c. Measure piston skirt diameter "P" with the micrometer.

ⓐ 5 mm (0.20 in) from the bottom edge of the piston



	Piston size "P"
Standard	**68.965 ~ 68.980 mm (2.7152 ~ 2.7157 in)**

d. If out of specification, replace the piston and piston rings as a set.

e. Calculate the piston-to-cylinder clearance with the following formula.

Piston-to-cylinder clearance =
Cylinder bore "C" –
Piston skirt diameter "P"

Piston-to-cylinder clearance
0.020 ~ 0.040 mm
(0.0008 ~ 0.0016 in)
<Limit>: 0.15 mm (0.0059 in)

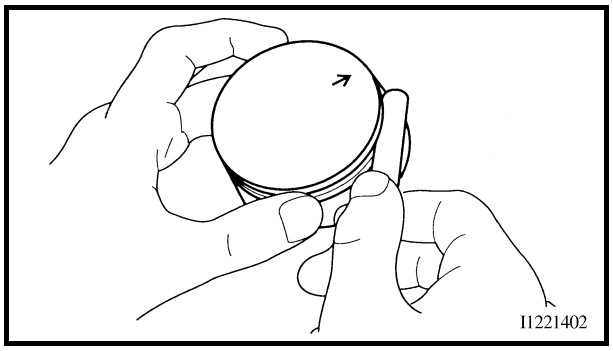
f. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

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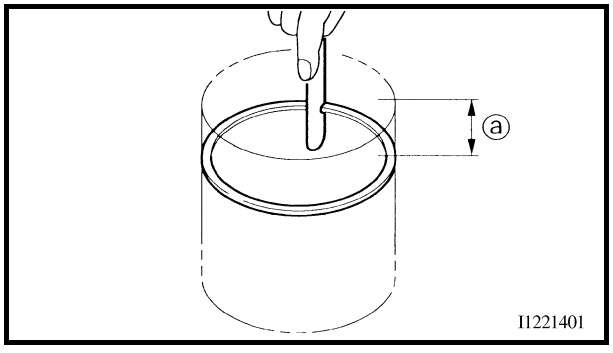
EAS00264
CHECKING THE PISTON RINGS

1. Measure:
   - piston ring side clearance
     Out of specification → Replace the piston and piston rings as a set.

NOTE:
Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.



Piston ring side clearance
Top ring
0.040 ~ 0.080 mm
(0.0016 ~ 0.0031 in)
<Limit>: 0.120 mm (0.0047 in)
2nd ring
0.030 ~ 0.070 mm
(0.0012 ~ 0.0028 in)
<Limit>: 0.120 mm (0.0047 in)



2. Install:
   - piston ring
     (into the cylinder)

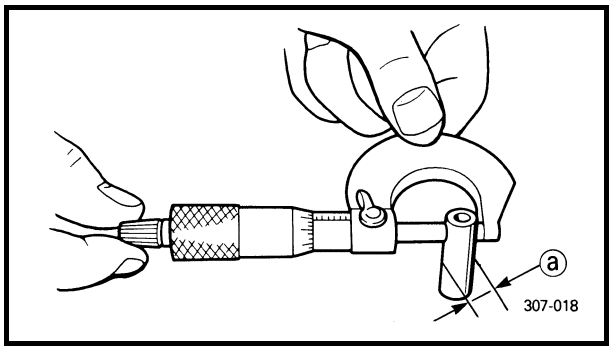
NOTE:
Level the piston ring into the cylinder with the piston crown.

ⓐ 5 mm (0.20 in)

3. Measure:
   • piston ring end gap
     Out of specification → Replace the piston ring.

NOTE:
The end gap of the oil ring expander spacer cannot be measured. If the oil ring rail gap is excessive, replace all three piston rings.

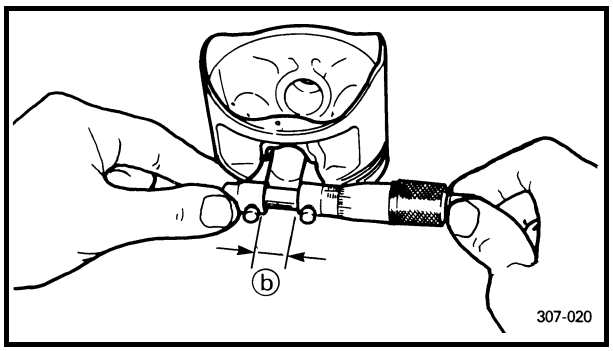
Piston ring end gap
Top ring
0.15 ~ 0.30 mm
(0.0059 ~ 0.0118 in)
<Limit>: 0.45 mm (0.0177 in)
2nd ring
0.30 ~ 0.45 mm
(0.0118 ~ 0.0177 in)
<Limit>: 0.70 mm (0.0276 in)
Oil ring
0.20 ~ 0.70 mm
(0.0079 ~ 0.0276 in)



EAS00266
CHECKING THE PISTON PIN

1. Check:
   • piston pin
     Blue discoloration/grooves → Replace the piston pin, and then check the lubrication system.
2. Measure:
   • piston pin outside diameter ⓐ
     Out of specification → Replace the piston pin.

Piston pin outside diameter
16.991 ~ 17.000 mm
(0.6689 ~ 0.6693 in)
<Limit>: 16.971 mm (0.6681 in)



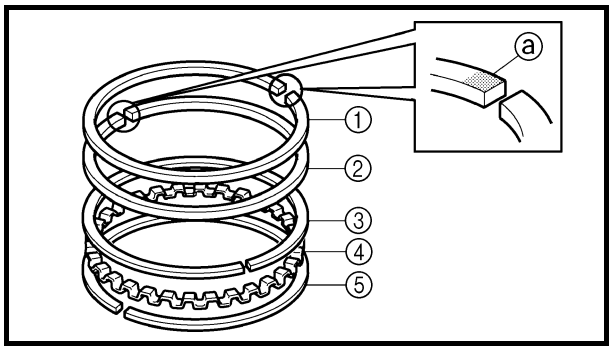
3. Measure:
   • piston pin bore diameter ⓑ (in the piston)
   Out of specification → Replace the piston pin.

Piston pin bore diameter
17.004 ~ 17.015 mm
(0.6694 ~ 0.6699 in)
<Limit>: 17.045 mm (0.6711 in)

4. Calculate:
   • piston-pin-to-piston-pin-bore clearance
   Out of specification → Replace the piston pin.

Piston-pin-to-piston-pin-bore clearance =
Piston pin bore diameter
(in the piston) –
Piston pin outside diameter

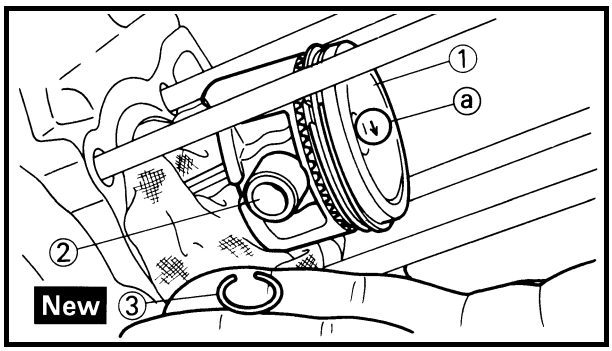
Piston-pin-to-piston-pin-bore clearance
0.004 ~ 0.024 mm
(0.0002 ~ 0.0009 in)
<Limit>: 0.074 mm (0.0029 in)



EAS00267
INSTALLING THE PISTON AND CYLINDER

1. Install:
   • top ring ①
   • 2nd ring ②
   • upper oil ring rail ③
   • oil ring expander ④
   • lower oil ring rail ⑤

NOTE:
Be sure to install the piston rings so that the manufacturer's marks or numbers ⓐ face up.

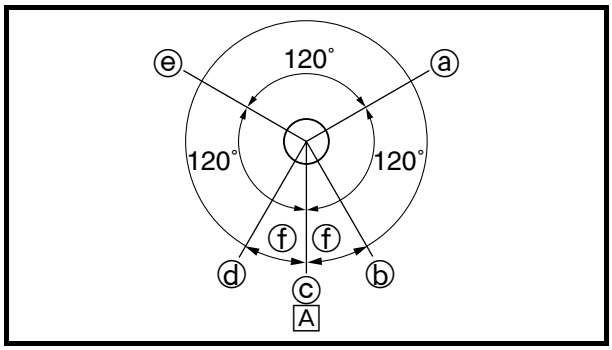


2. Install:
   - piston ①
   - piston pin ②
   - piston pin clips ③ New

NOTE:
- Apply engine oil to the piston pin.
- Make sure the arrow mark ⓐ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.

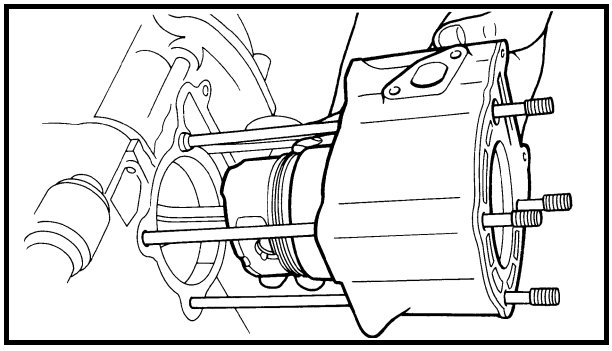
3. Install:
   - dowel pins
   - cylinder gasket New
4. Lubricate:
   - piston
   - piston rings
   - cylinder
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**



5. Offset:
   - piston ring end gaps

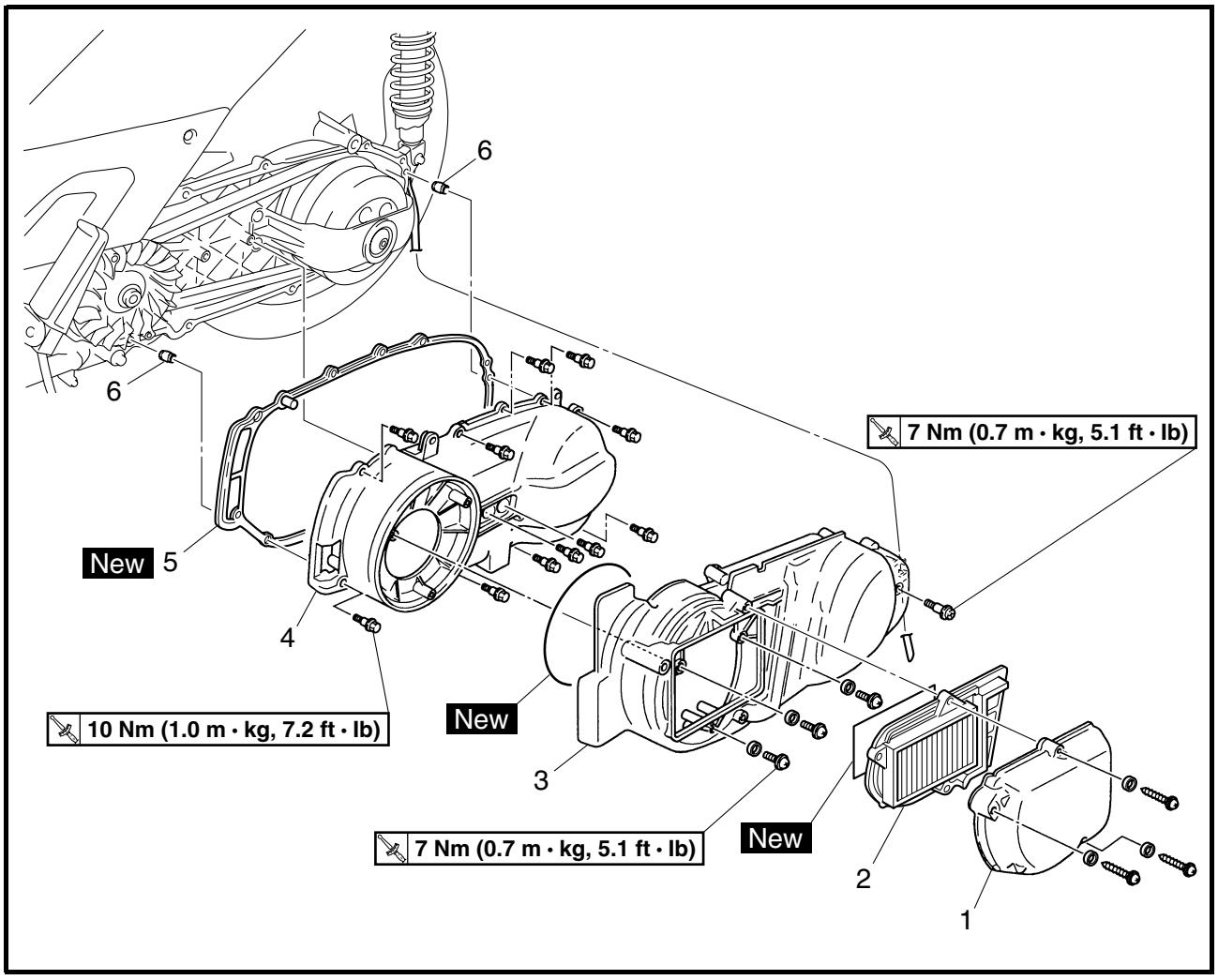
ⓐ Top ring
ⓑ Upper oil ring rail
ⓒ Oil ring expander
ⓓ Lower oil ring rail
ⓔ 2nd ring
ⓕ 20 mm (0.79 in)
A Intake side



6. Install:
   - cylinder

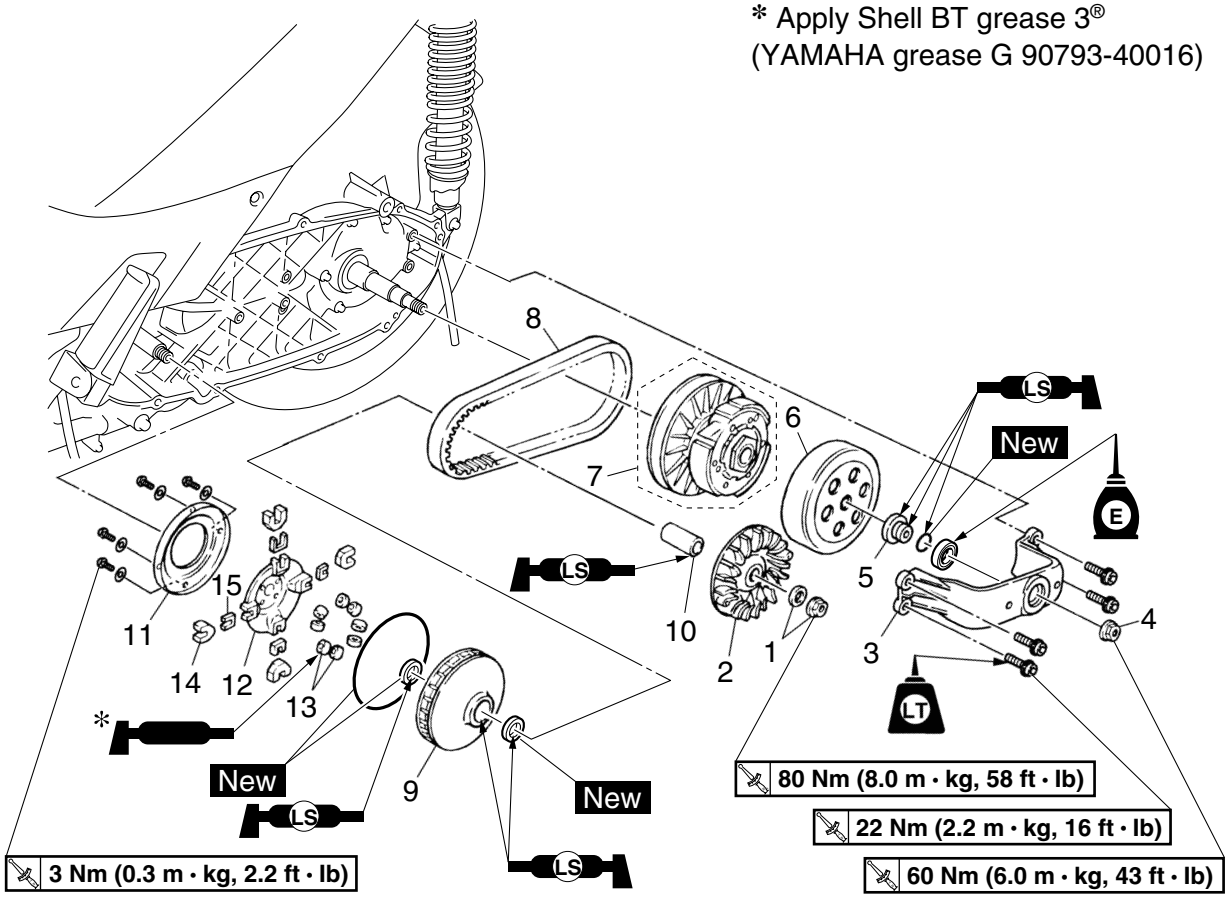
NOTE:
- While compressing the piston rings with one hand, install the cylinder with the other hand.
- Pass the timing chain and timing chain guide (intake side) through the timing chain cavity.

EAS00316
BELT DRIVE
V-BELT CASE COVER

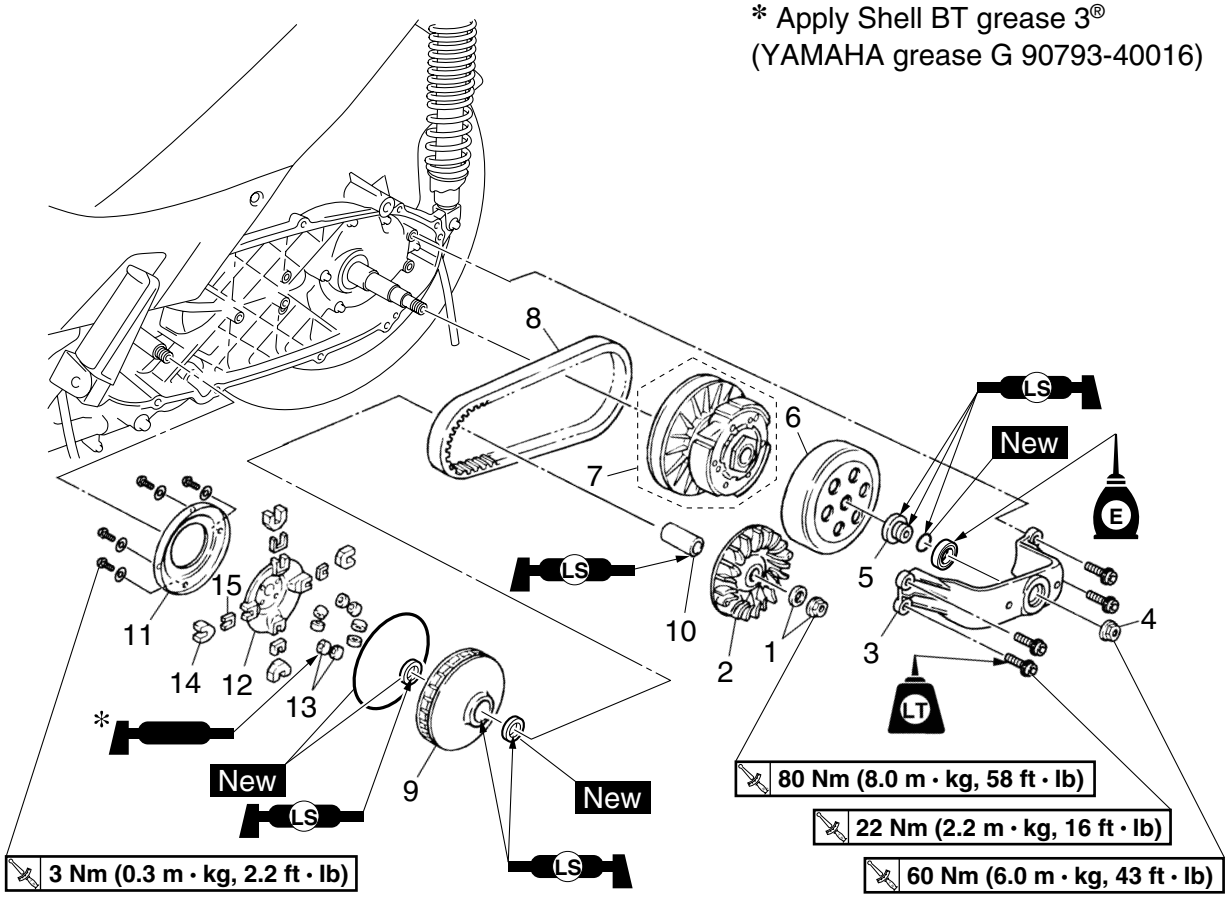


Order	Job/Part	Q'ty	Remarks
	Removing the V-belt case cover		Remove the parts in the order listed.
	Center panel 1 (left)/air filter case assembly		Refer to "COVERS AND PANELS" in chapter 3.
1	V-belt case air filter cover	1	
2	V-belt case air filter element	1	
3	V-belt case cover	1	
4	V-belt case	1	
5	V-belt case gasket	1	
6	Dowel pin	2	
			For installation, reverse the removal procedure.

V-BELT, PRIMARY SHEAVE AND SECONDARY SHEAVE

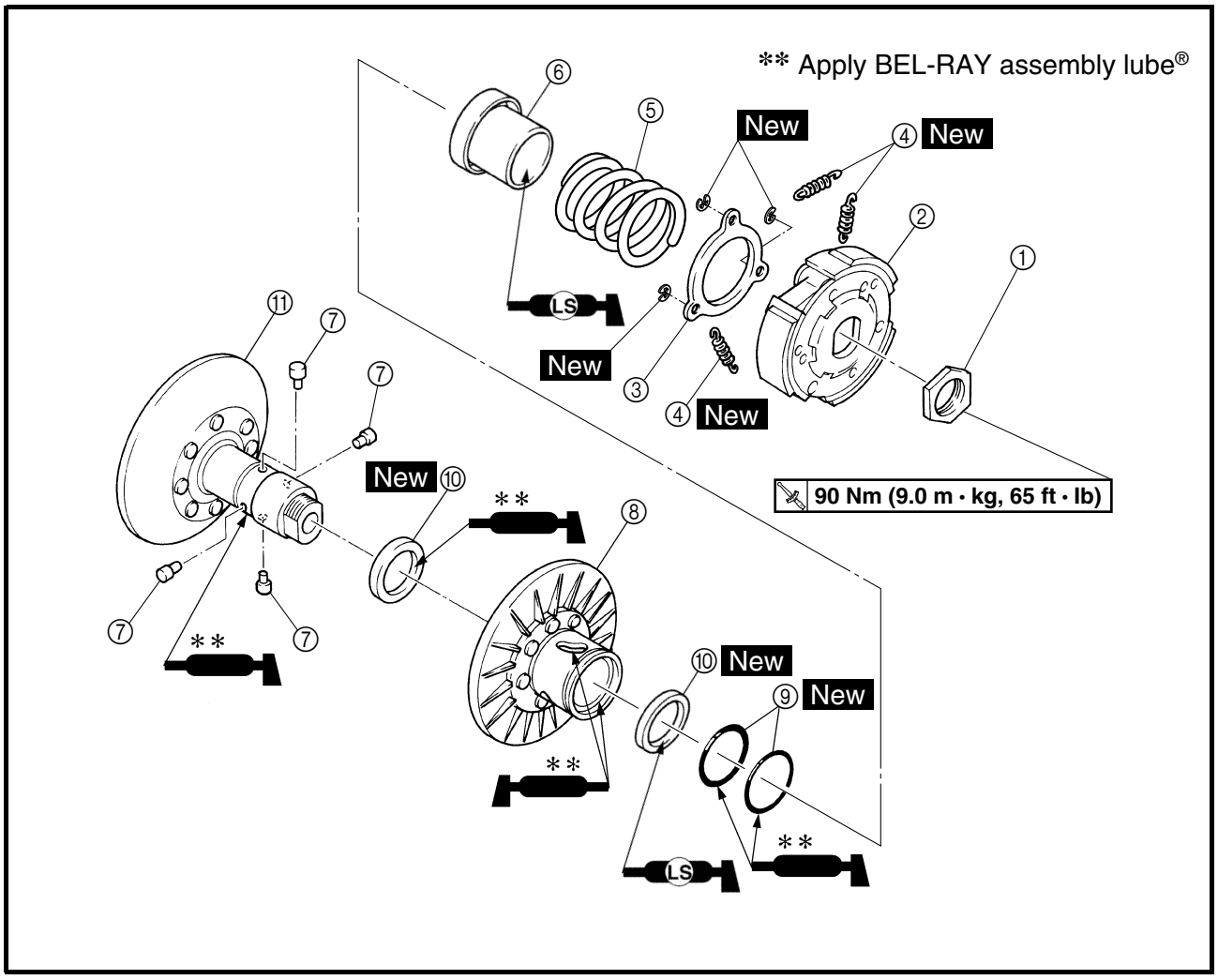


Order	Job/Part	Q'ty	Remarks
	Removing the V-belt, primary sheave and secondary sheave		Remove the parts in the order listed.
1	Primary sheave nut/washer	1/1	Refer to "REMOVING THE PRIMARY SHEAVE" and "INSTALLING THE SECONDARY SHEAVE, V-BELT, AND PRIMARY SHEAVE".
2	Primary fixed sheave	1	
3	Secondary sheave bracket	1	
4	Secondary sheave nut	1	Refer to "REMOVING THE SECONDARY SHEAVE AND V-BELT" and "INSTALLING THE SECONDARY SHEAVE, V-BELT, AND PRIMARY SHEAVE".
5	Collar	1/1	
6	Clutch housing	1	
7	Secondary sheave assembly	1	
8	V-belt	1	
9	Primary sliding sheave	1	
10	Spacer	1	

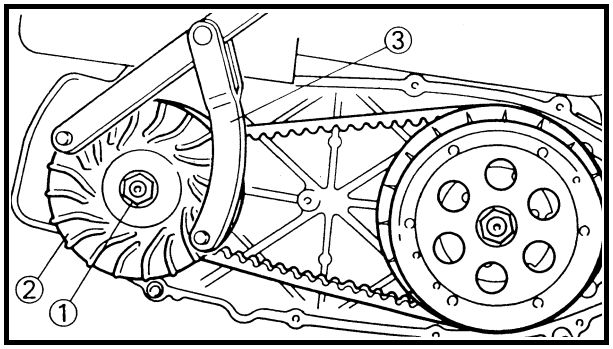


Order	Job/Part	Q'ty	Remarks
11	Primary sheave cap	1	
12	Cam	1	
13	Weight	8	
14	Slider	4	
15	Spacer	4	
			For installation, reverse the removal procedure.

SECONDARY SHEAVE



Order	Job/Part	Q'ty	Remarks
	Disassembling the secondary sheave		Remove the parts in the order listed.
①	Clutch carrier nut	1	
②	Clutch carrier	1	
③	Clutch carrier plate	1	
④	Clutch shoe spring	3	
⑤	Compression spring	1	
⑥	Spring seat	1	
⑦	Guide pin	4	
⑧	Secondary sliding sheave	1	
⑨	O-ring	2	
⑩	Oil seal	2	
⑪	Secondary fixed sheave	1	
			For assembly, reverse the disassembly procedure.



EAS00317
REMOVING THE PRIMARY SHEAVE

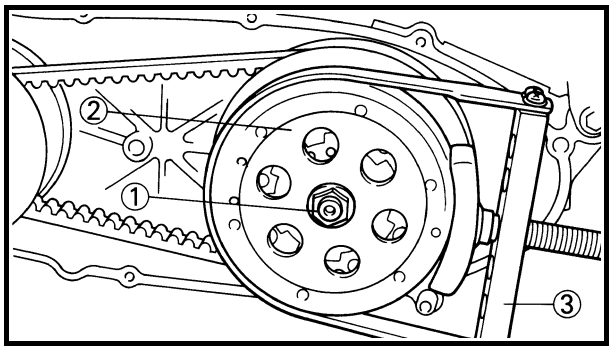
1. Remove:
   - V-belt case air filter cover
   - V-belt case cover
   - V-belt case

NOTE:
Loosen each V-belt case bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.
After all of the bolts are fully loosened, remove them.

2. Remove:
   - primary sheave nut ①
   - washer
   - primary fixed sheave ②

NOTE:
While holding the primary fixed sheave with the rotor holding tool ③, loosen the primary sheave nut.

	Rotor holding tool **90890-01235**

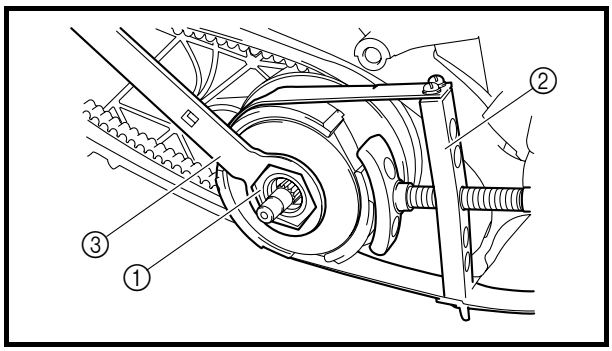


EAS00318
REMOVING THE SECONDARY SHEAVE AND V-BELT

1. Remove:
   - secondary sheave nut ①
   - collar
   - clutch housing ②

NOTE:
While holding the clutch housing with the sheave holder ③, loosen the secondary sheave nut.

	Sheave holder **90890-01701**



2. Loosen:
   • clutch carrier nut ①

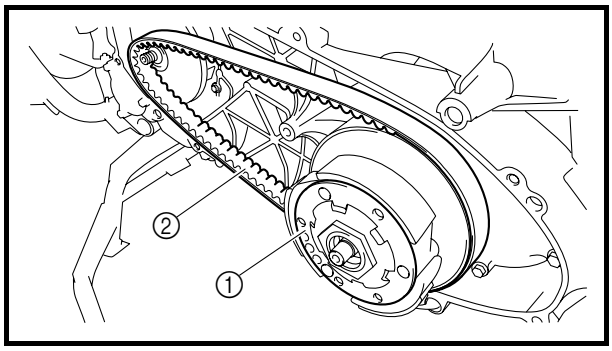
CAUTION:

Do not remove the clutch carrier nut at this stage.

NOTE:

While holding the clutch carrier with the sheave holder ②, loosen the clutch carrier nut one full turn with the locknut wrench ③.

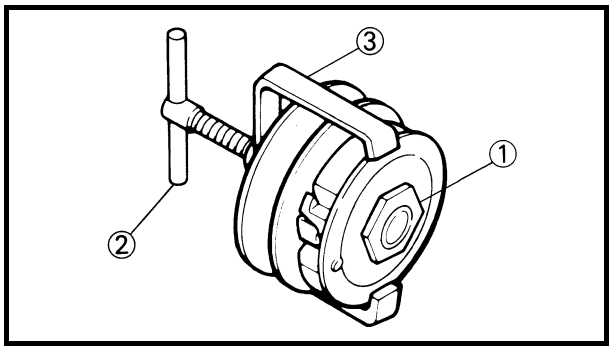
Sheave holder
90890-01701
Locknut wrench
90890-01348



3. Remove:
   • secondary sheave assembly ①
   • V-belt ②

NOTE:

Remove the V-belt and secondary sheave assembly from the primary sheave side.



EAS00319

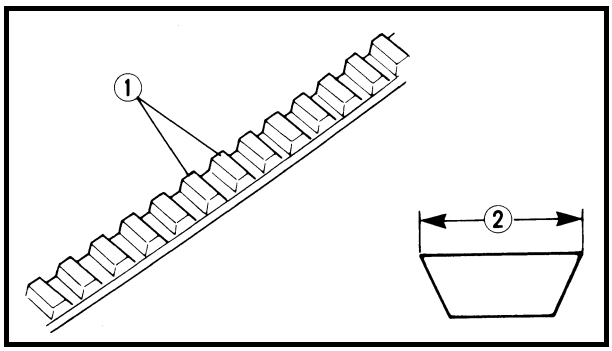
DISASSEMBLING THE SECONDARY SHEAVE

1. Remove:
   • clutch carrier nut ①

NOTE:

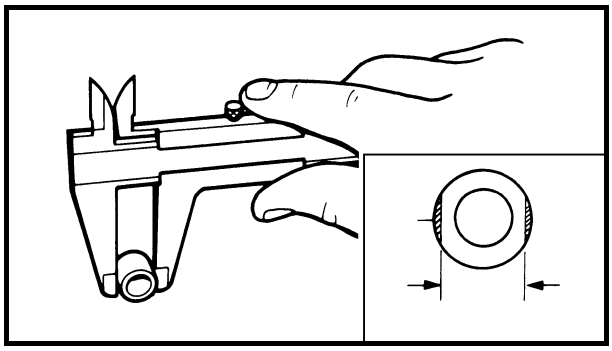
While compressing the compression spring with the clutch spring holder ② and clutch spring holder arm ③, remove the clutch carrier nut.

Clutch spring holder
90890-01337
Clutch spring holder arm
90890-01464



EAS00320
CHECKING THE V-BELT
1. Check:
   - V-belt ①
     Cracks/damage/wear → Replace.
     Grease/oil → Clean the primary and secondary sheaves.
2. Measure:
   - V-belt width ②
     Out of specification → Replace.

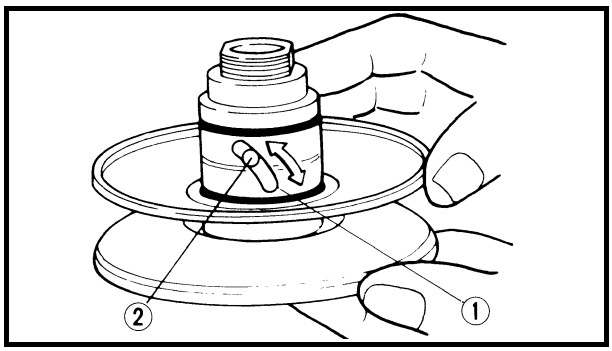
V-belt width
23.0 mm (0.91 in)
<Limit>: 21.0 mm (0.83 in)



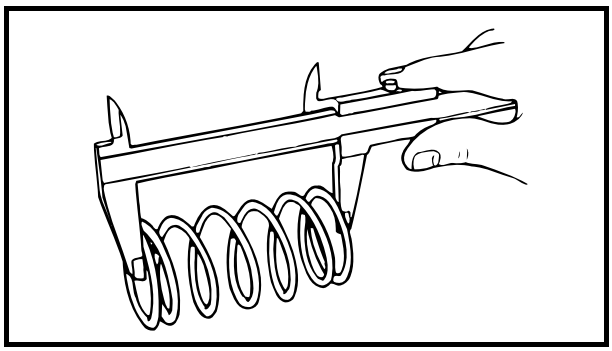
EAS00321
CHECKING THE PRIMARY SHEAVE WEIGHTS
The following procedure applies to all of the primary sheave weights.
1. Check:
   - primary sheave weight
     Cracks/damage/wear → Replace.
2. Measure:
   - primary sheave weight outside diameter
     Out of specification → Replace.

Primary sheave weight outside diameter
20.0 mm (0.79 in)
<Limit>: 19.5 mm (0.77 in)

EAS00322
CHECKING THE SECONDARY SHEAVE
1. Check:
   - secondary fixed sheave
   - secondary sliding sheave
     Cracks/damage/wear → Replace the secondary fixed and sliding sheaves as a set.



2. Check:
   • torque cam groove ①
   Damage/wear → Replace the secondary fixed and sliding sheaves as a set.
3. Check:
   • guide pin ②
   Damage/wear → Replace the secondary fixed and sliding sheaves as a set.



4. Check:
   • compression spring free length
   Out of specification → Replace the spring.

Compression spring free length
102.4 mm (4.03 in)
<Limit>: 90.0 mm (3.54 in)

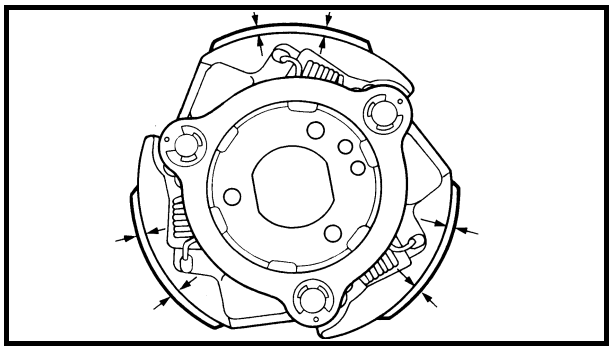
CHECKING THE CLUTCH SHOES

The following procedure applies to all of the clutch shoes.

1. Check:
   • clutch shoe
   Damage/wear → Replace the clutch shoes and springs as a set.
   Glazed areas → Sand with coarse sandpaper.

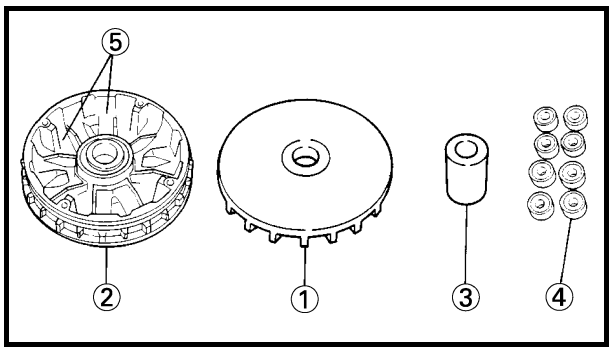
NOTE:

After sanding the glazed areas, clean the clutch with a cloth.



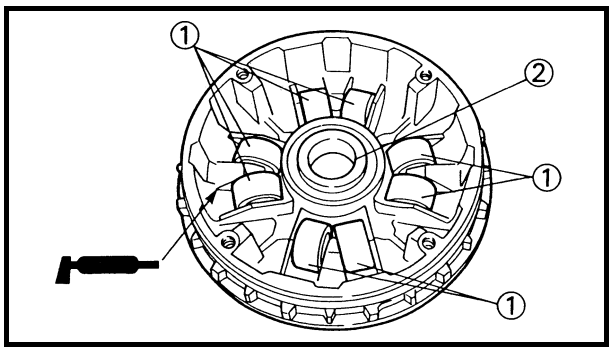
2. Measure:
   • clutch shoe thickness
   Out of specification → Replace the clutch shoes and springs as a set.

Clutch shoe thickness
3.3 mm (0.13 in)
<Limit>: 2.0 mm (0.08 in)



EAS00323
ASSEMBLING THE PRIMARY SHEAVE

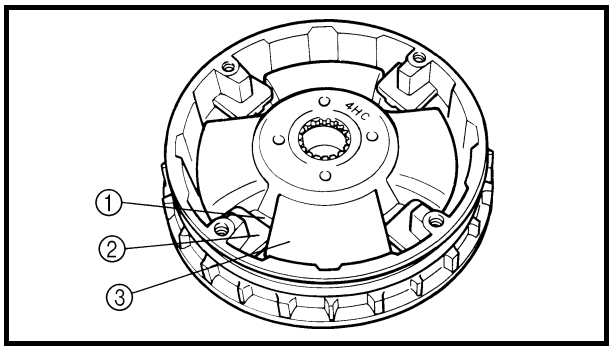
1. Clean:
   - primary fixed sheave ①
   - primary sliding sheave ②
   - spacer ③
   - primary sheave weights ④
   - primary sliding sheave cam face ⑤



2. Install:
   - primary sheave weights ①
   - spacer ②

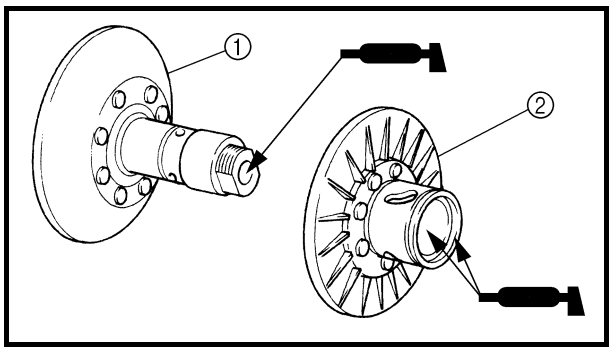
NOTE:
Before installing the primary sheave weights, lubricate the inside and outside of each weight with Shell BT grease 3®.

	Recommended lubricant **Shell BT grease 3®**



3. Install:
   - spacers ①
   - sliders ②
   - cam ③
   - primary sheave cap

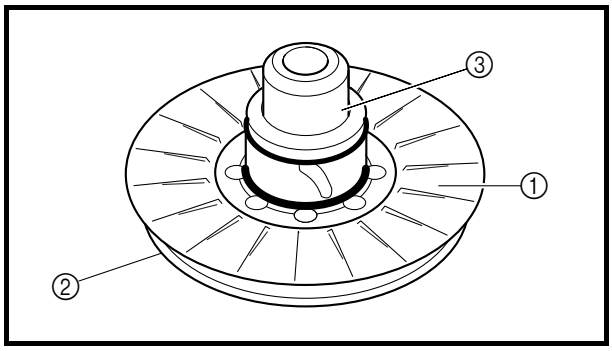
3 Nm (0.3 m · kg, 2.2 ft · lb)



EAS00324
ASSEMBLING THE SECONDARY SHEAVE

1. Lubricate:
   - secondary fixed sheave's inner surface ①
   - secondary sliding sheave's inner surface ②
   - oil seals New
     (with the recommended lubricant)

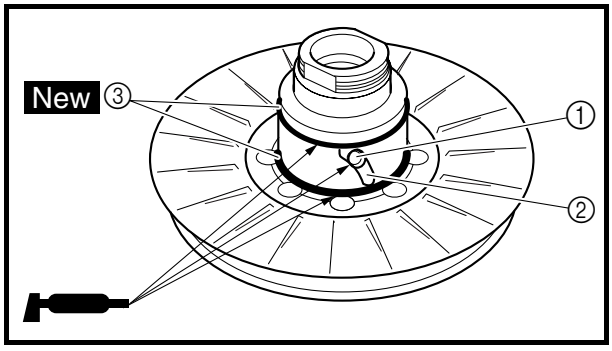
	Recommended lubricant **BEL-RAY assembly lube®**



2. Install:
   - oil seals New
   - secondary sliding sheave ①

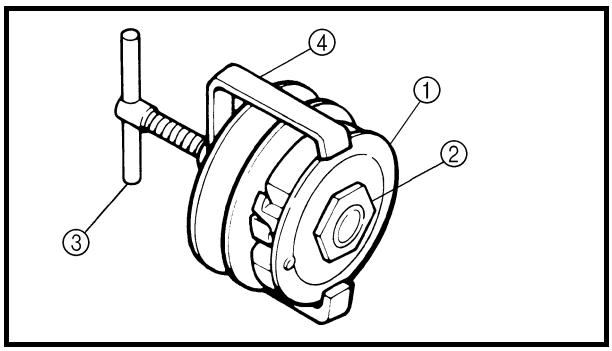
NOTE:
Install the secondary sliding sheave onto the secondary fixed sheave ② with the oil seal guide ③.

	Oil seal guide (ø41) **90890-01396**



3. Install:
   - guide pins ①
4. Lubricate:
   - guide pin grooves ②
   - O-rings ③ New
     (with the recommended lubricant)

	Recommended lubricant **BEL-RAY assembly lube®**



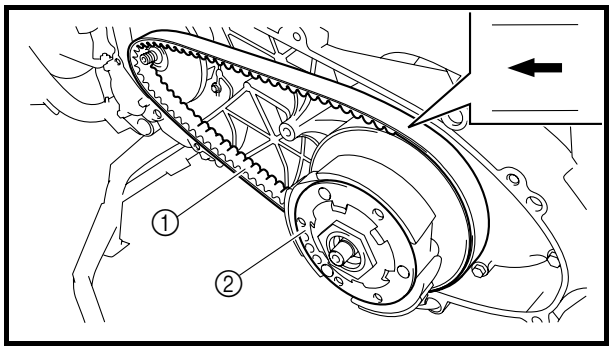
5. Install:
   - spring seat
   - compression spring
   - clutch carrier ①
   - clutch carrier nut ②

NOTE:

While compressing the compression spring with the clutch spring holder ③ and clutch spring holder arm ④, install the clutch carrier nut.



Clutch spring holder
90890-01337
Clutch spring holder arm
90890-01464



EAS00325

INSTALLING THE SECONDARY SHEAVE, V-BELT, AND PRIMARY SHEAVE

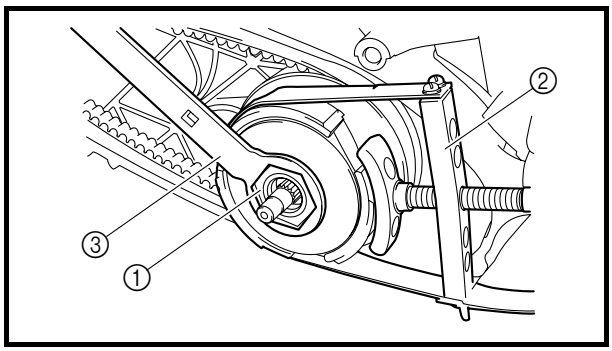
1. Install:
   - V-belt ①
   - secondary sheave assembly ②

CAUTION:

Do not allow grease to contact the V-belt or secondary sheave assembly.

NOTE:

- Install the V-belt with the printed arrow mark on the V-belt facing in the direction shown in the illustration.
- Install the V-belt onto the primary sheave side.

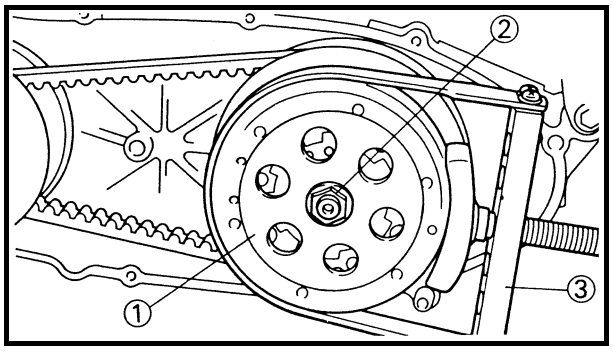


2. Install:
   • clutch carrier nut ①

90 Nm (9.0 m · kg, 65 ft · lb)

NOTE:
While holding the clutch carrier with the sheave holder ②, tighten the clutch carrier nut with the locknut wrench ③.

Sheave holder
90890-01701
Locknut wrench
90890-01348

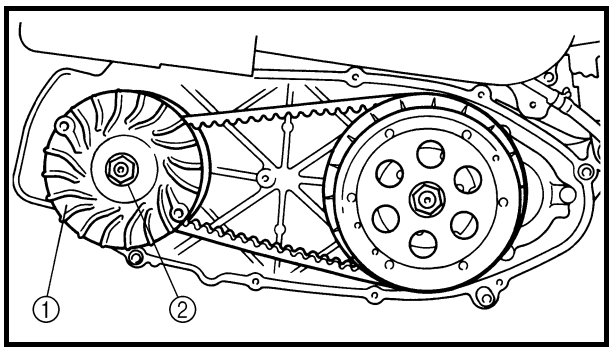


3. Install:
   • clutch housing ①
   • collar
   • secondary sheave nut ②

60 Nm (6.0 m · kg, 43 ft · lb)

NOTE:
While holding the clutch housing with the sheave holder ③, tighten the secondary sheave nut.

Sheave holder
90890-01701



4. Install:
   - V-belt
   - primary fixed sheave ①
   - washer
   - primary sheave nut ②

80 Nm (8.0 m · kg, 58 ft · lb)

NOTE:
- Install the V-belt onto the primary sheave (when the pulley is at its widest position) and onto the secondary sheave (when the pulley is at its narrowest position), and make sure the V-belt is tight.
- While holding the primary fixed sheave with the rotor holding tool, tighten the primary sheave nut.

Rotor holding tool
90890-01235

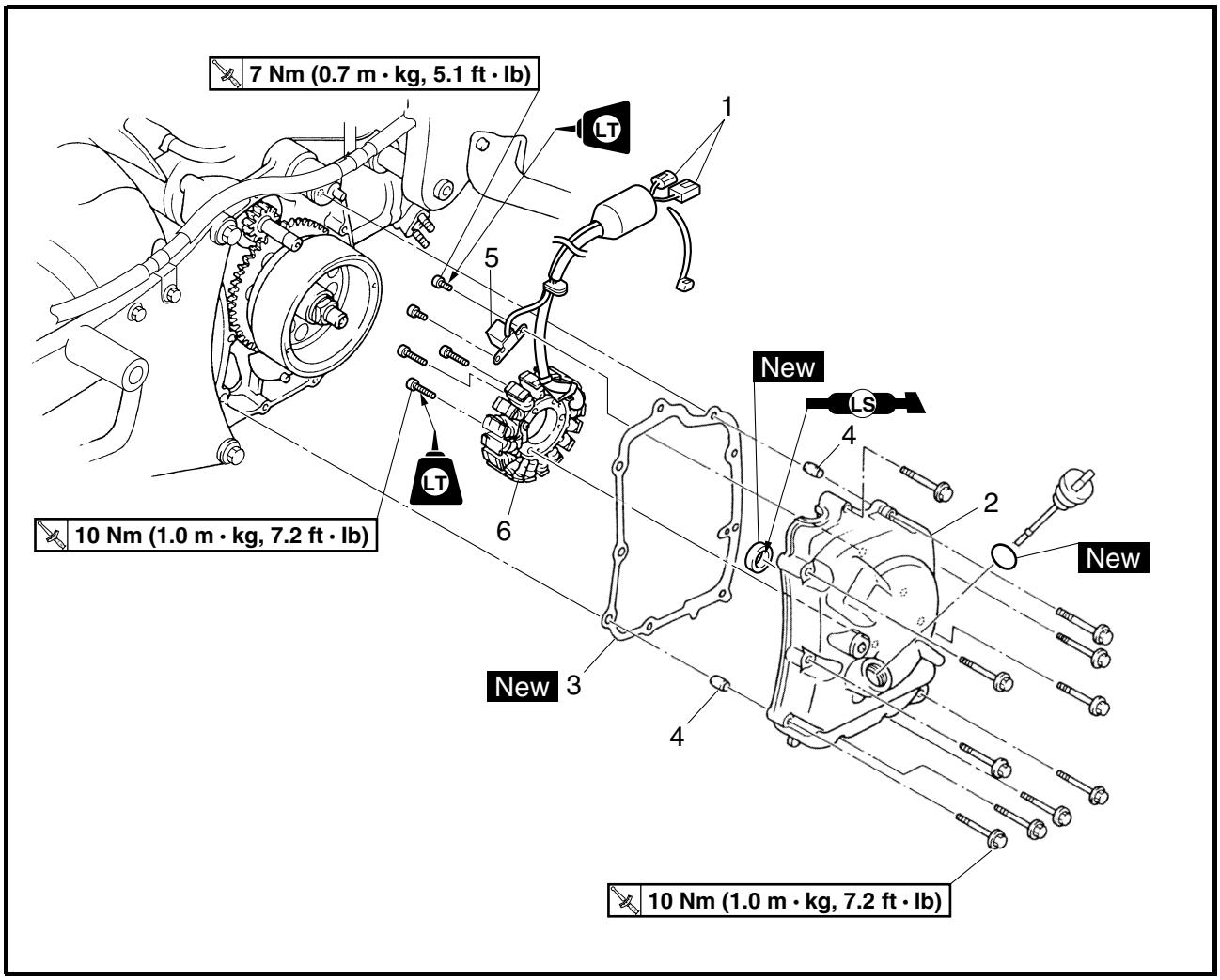
5. Install:
   - secondary sheave bracket

LT **22 Nm (2.2 m · kg, 16 ft · lb)**

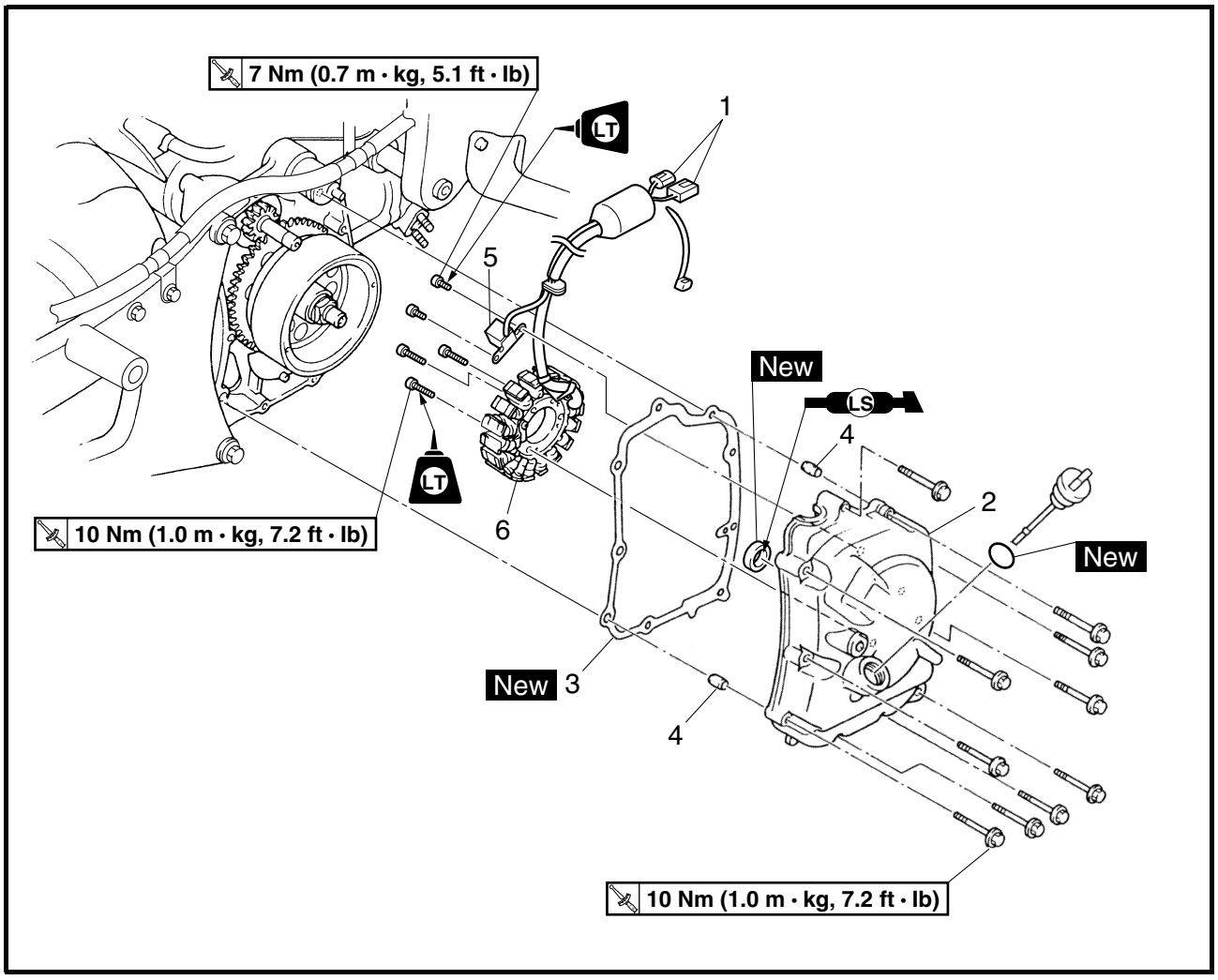
6. Install:
   - dowel pins
   - V-belt case gasket New
   - V-belt case

NOTE:
- Make sure that the V-belt case gasket lip fits properly around the V-belt case.
- Tighten the V-belt case bolts in stages and in a crisscross pattern.

EAS00341
STARTER CLUTCH AND GENERATOR
GENERATOR COVER AND STATOR COIL



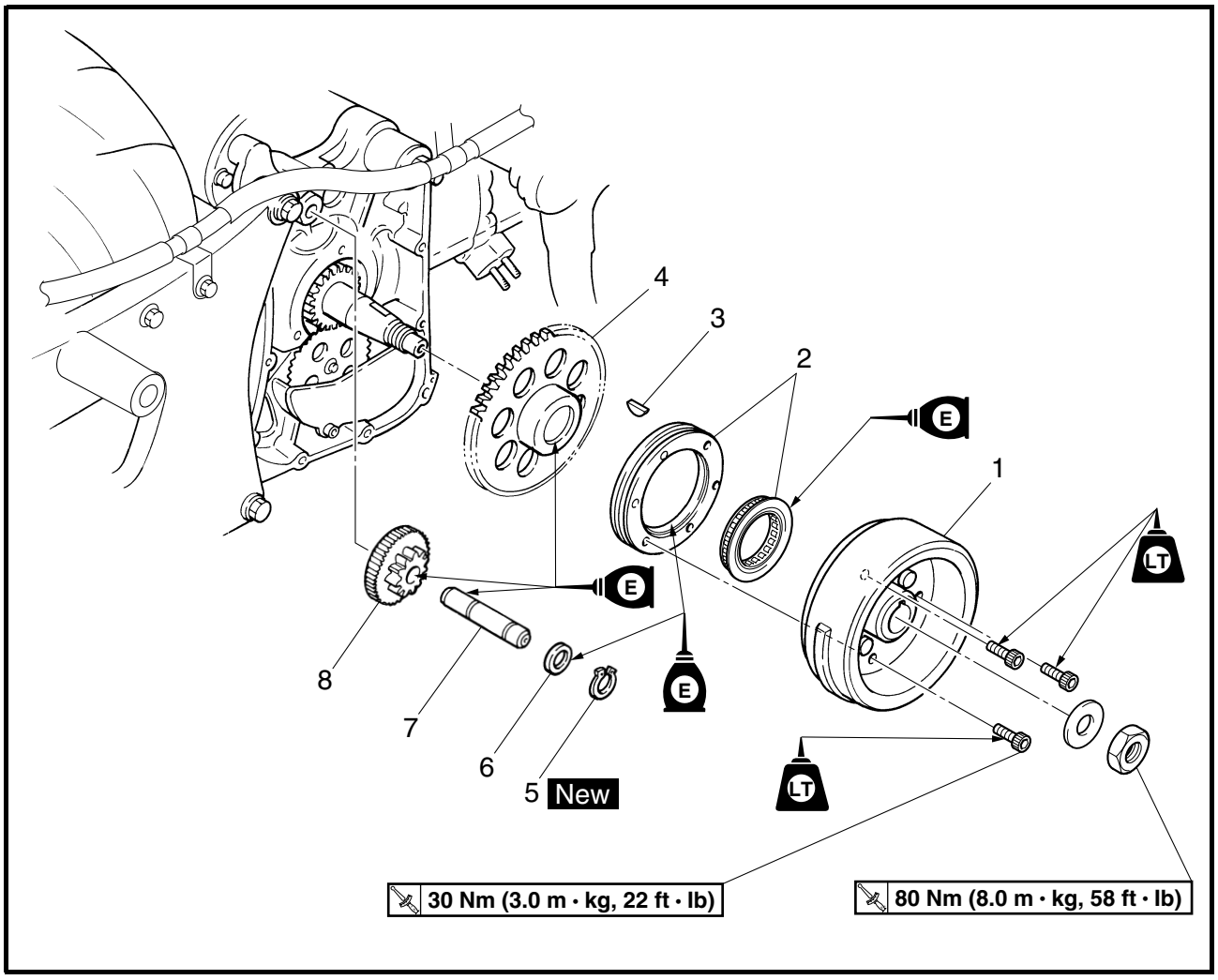
Order	Job/Part	Q'ty	Remarks
	Removing the generator cover and stator coil		Remove the parts in the order listed.
	Storage box/center panel 1		Refer to "COVERS AND PANELS" in chapter 3.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" in chapter 3.
	Muffler/exhaust pipe		Refer to "ENGINE REMOVAL".
	Air cut-off valve assembly		Refer to "AIR INDUCTION SYSTEM" in chapter 7.
1	Pickup coil/stator assembly coupler	1/1	Disconnect.
2	Generator cover	1	
3	Generator cover gasket	1	
4	Dowel pin	2	
5	Pickup coil	1	



Order	Job/Part	Q'ty	Remarks
6	Stator coil	1	For installation, reverse the removal procedure.

EAS00342

STARTER CLUTCH

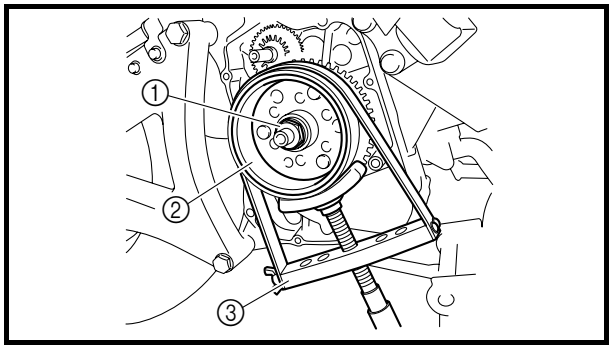


Order	Job/Part	Q'ty	Remarks
	Removing the starter clutch		Remove the parts in the order listed.
1	Generator rotor	1	Refer to "REMOVING THE GENERATOR", "REMOVING THE STARTER CLUTCH", "INSTALLING THE STARTER CLUTCH" and "INSTALLING THE GENERATOR".
2	Starter clutch	1	
3	Woodruff key	1	
4	Starter clutch gear	1	
5	Circlip	1	
6	Washer	1	
7	Starter clutch idle gear shaft	1	
8	Starter clutch idle gear	1	
			For installation, reverse the removal procedure.

EAS00347
REMOVING THE GENERATOR

1. Remove:
   • generator cover

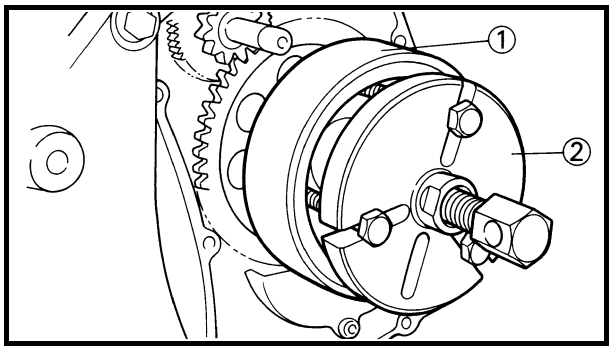
NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.
After all of the bolts are fully loosened, remove them.



2. Remove:
   • generator rotor nut ①
   • washer

NOTE:
- While holding the generator rotor ② with the sheave holder ③, loosen the generator rotor nut.
- Do not allow the sheave holder to touch the projection on the generator rotor.

	Sheave holder **90890-01701**

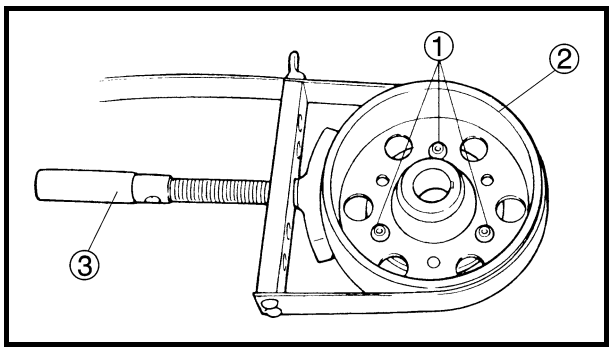


3. Remove:
   • generator rotor ①
     (with the flywheel puller ②)
   • woodruff key

CAUTION:
To protect the end of the crankshaft, place an appropriate sized socket between the flywheel puller set's center bolt and the crankshaft.

NOTE:
Make sure the flywheel puller is centered over the generator rotor.

	Flywheel puller **90890-01362**



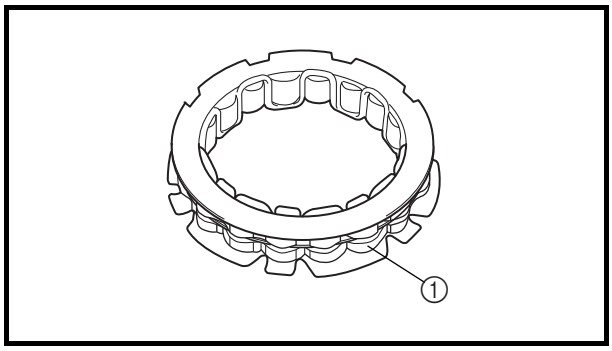
EAS00344
REMOVING THE STARTER CLUTCH

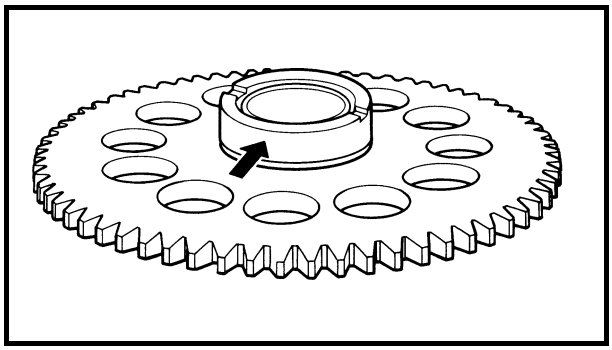
1. Remove:
   • starter clutch bolts ①

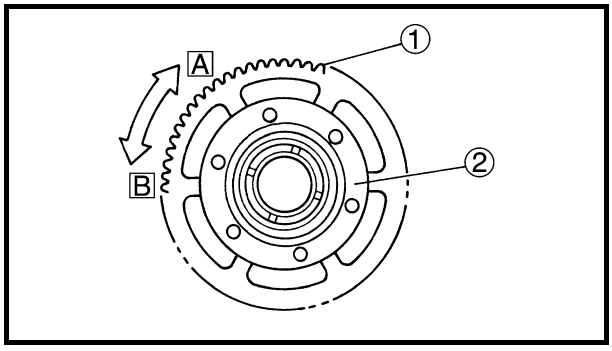
NOTE:

- While holding the generator rotor ② with the sheave holder ③, remove the starter clutch bolts.
- Do not allow the sheave holder to touch the projection on the generator rotor.

	Sheave holder **90890-01701**







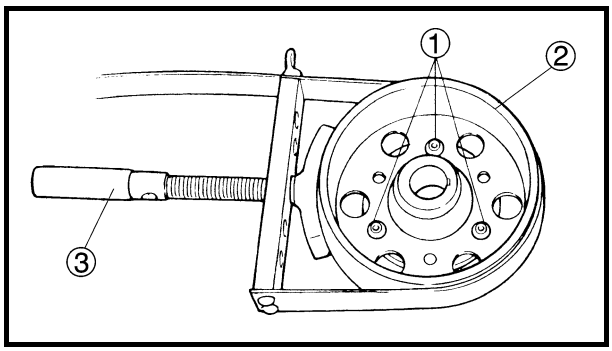
EAS00351
CHECKING THE STARTER CLUTCH

1. Check:
   • starter clutch rollers ①
   Damage/wear → Replace.
2. Check:
   • starter clutch idle gear
   • starter clutch gear
   Burrs/chips/roughness/wear → Replace the defective part(s).
3. Check:
   • starter clutch gear's contacting surfaces
   Damage/pitting/wear → Replace the starter clutch gear.
4. Check:
   • starter clutch operation

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Install the starter clutch gear ① onto the starter clutch ② and hold the starter clutch.
b. When turning the starter clutch gear clockwise [A], the starter clutch and the starter clutch gear should engage, otherwise the starter clutch is faulty and must be replaced.
c. When turning the starter clutch gear counterclockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.

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EAS00355
INSTALLING THE STARTER CLUTCH

1. Install:
   - starter clutch bolts ①

LT | 30 Nm (3.0 m · kg, 22 ft · lb)

NOTE:

- While holding the generator rotor ② with the sheave holder ③, tighten the starter clutch bolts.
- Do not allow the sheave holder to touch the projection on the generator rotor.

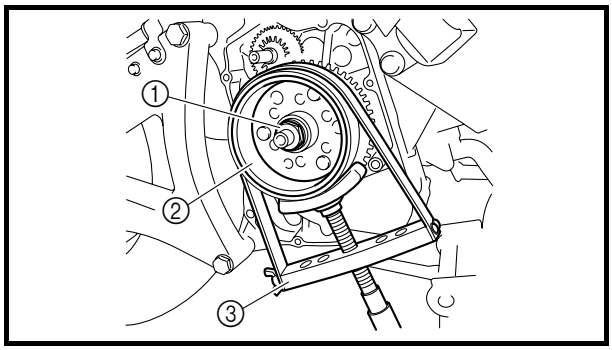
	Sheave holder **90890-01701**

EAS00354
INSTALLING THE GENERATOR

1. Install:
   - starter clutch gear
   - woodruff key
   - generator rotor
   - washer
   - generator rotor nut

NOTE:

- Clean the tapered portion of the crankshaft and the generator rotor hub.
- When installing the generator rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.



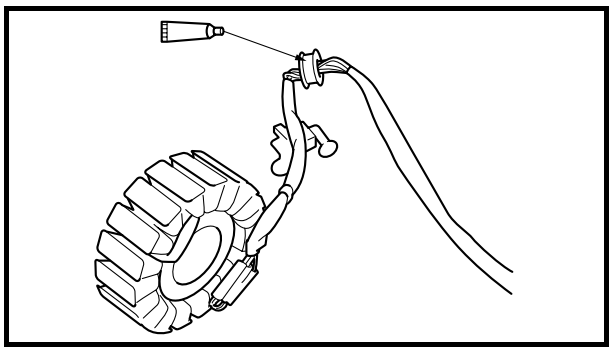
2. Tighten:
   - generator rotor nut ①

	80 Nm (8.0 m · kg, 58 ft · lb)

NOTE:

- While holding the generator rotor ② with the sheave holder ③, tighten the generator rotor nut.
- Do not allow the sheave holder to touch the projection on the generator rotor.

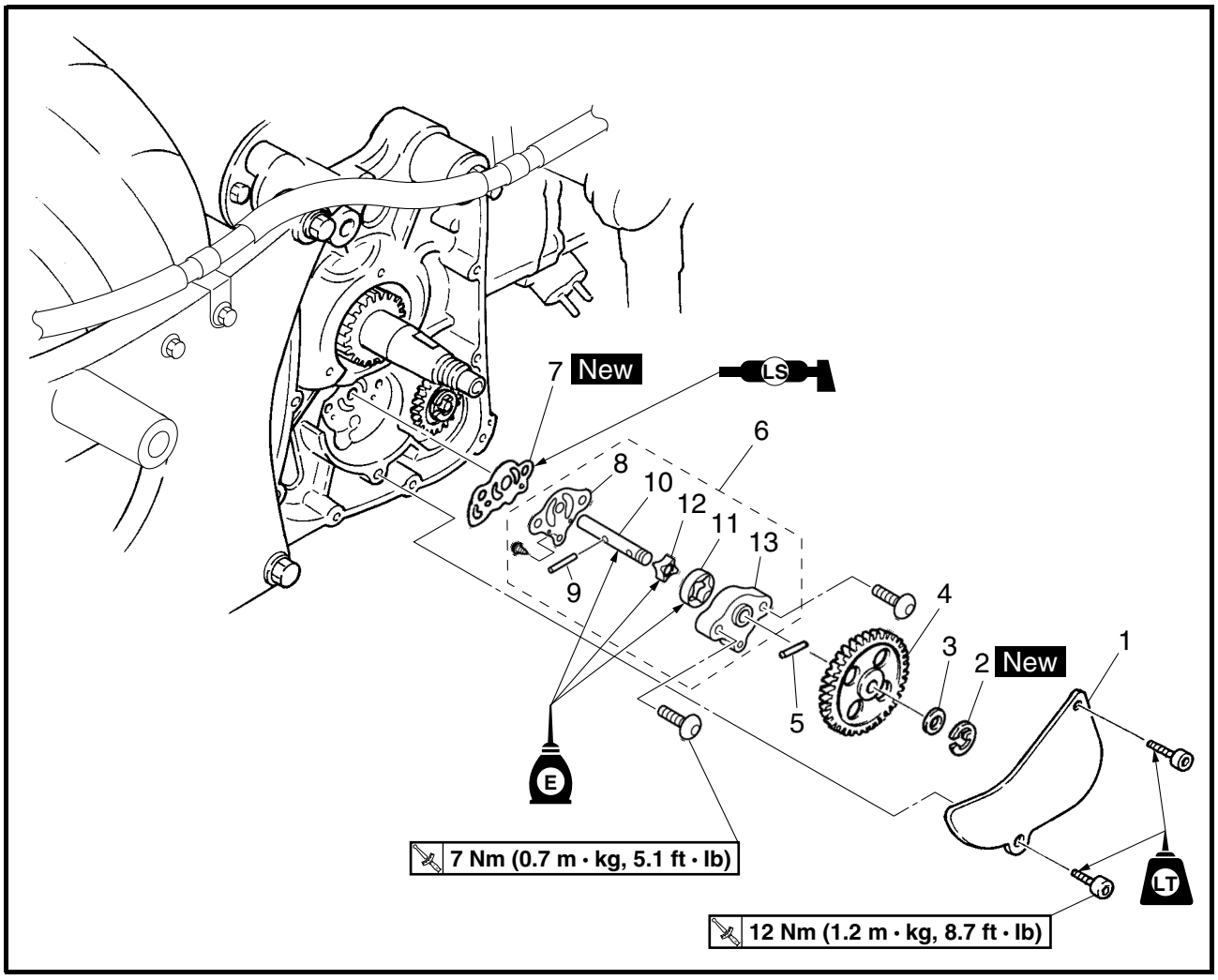
	Sheave holder **90890-01701**



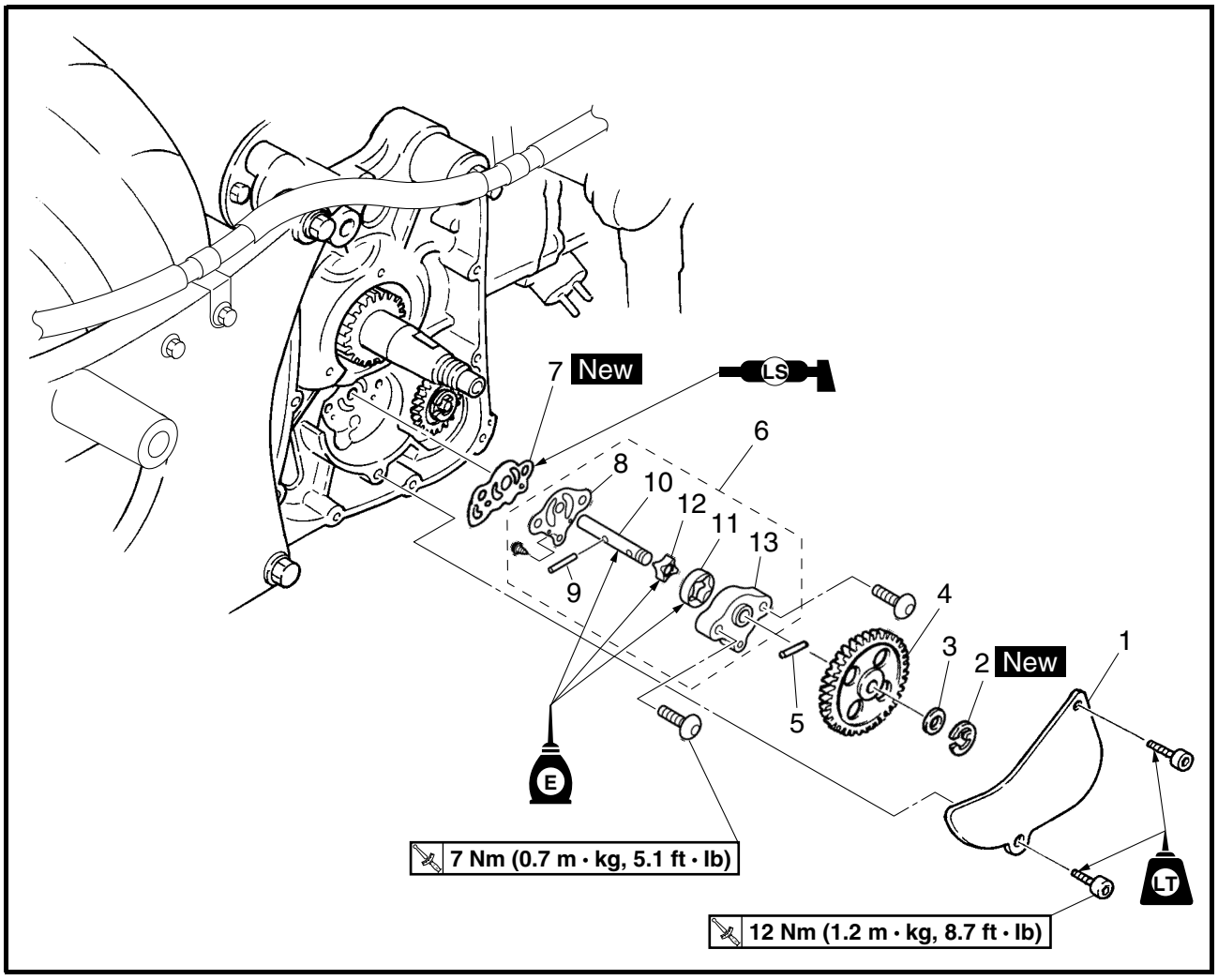
3. Apply:
   • sealant
   (onto the pickup coil/stator assembly lead grommet)

	Yamaha bond No.1215 **90890-85505**

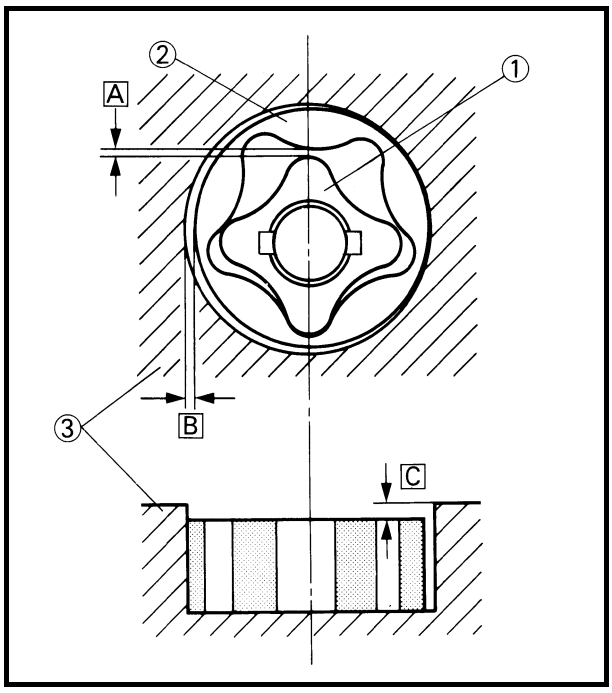
EAS00357
OIL PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the oil pump assembly		Remove the parts in the order listed.
	Starter clutch gear		Refer to "STARTER CLUTCH AND GENERATOR".
1	Oil baffle plate	1	
2	Circlip	1	
3	Washer	1	
4	Oil pump driven gear	1	
5	Pin	1	
6	Oil pump assembly	1	
7	Oil pump gasket	1	
8	Oil pump housing cover	1	
9	Pin	1	
10	Oil pump shaft	1	
11	Oil pump inner rotor	1	



Order	Job/Part	Q'ty	Remarks
12	Oil pump outer rotor	1	
13	Oil pump housing	1	
			For installation, reverse the removal procedure.



EAS00364
CHECKING THE OIL PUMP

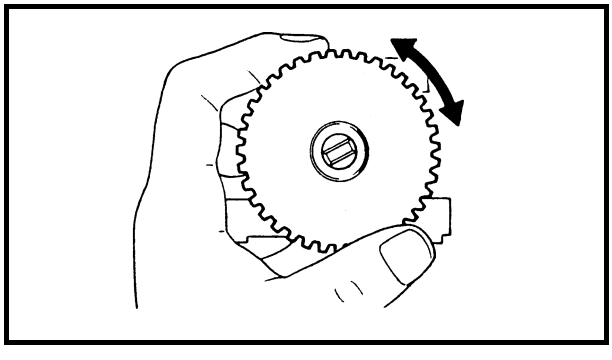
1. Check:
   - oil pump drive gear
   - oil pump driven gear
   - oil pump housing
   - oil pump housing cover

   Cracks/damage/wear → Replace the defective part(s).
2. Measure:
   - inner-rotor-to-outer-rotor-tip clearance A
   - outer-rotor-to-oil-pump-housing clearance B
   - oil-pump-housing-to-inner-rotor-and-outer-rotor clearance C

   Out of specification → Replace the oil pump assembly.

① Inner rotor
② Outer rotor
③ Oil pump housing

Inner-rotor-to-outer-rotor-tip clearance
Less than 0.15 mm (0.0059 in)
<Limit>: 0.23 mm (0.0091 in)
Outer-rotor-to-oil-pump-housing clearance
0.013 ~ 0.036 mm
(0.0005 ~ 0.0014 in)
<Limit>: 0.106 mm (0.0042 in)
Oil-pump-housing-to-inner-rotor-and-outer-rotor clearance
0.04 ~ 0.09 mm
(0.0016 ~ 0.0035 in)
<Limit>: 0.16 mm (0.0063 in)



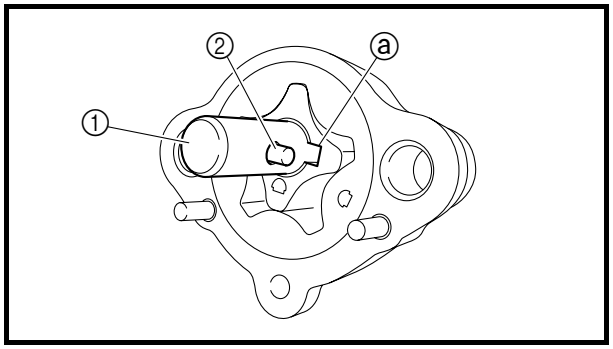
3. Check:
   - oil pump operation

   Rough movement → Repeat steps (1) and (2) or replace the defective part(s).

EAS00375
ASSEMBLING THE OIL PUMP

1. Lubricate:
   - inner rotor
   - outer rotor
   - oil pump shaft
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**



2. Install:
   - oil pump shaft ①
   - pin ②

NOTE:

When installing the pin, align the pin with the groove ⓐ in the inner rotor.

3. Check:
   - oil pump operation
     Refer to “CHECKING THE OIL PUMP”.

EAS00376
INSTALLING THE OIL PUMP ASSEMBLY

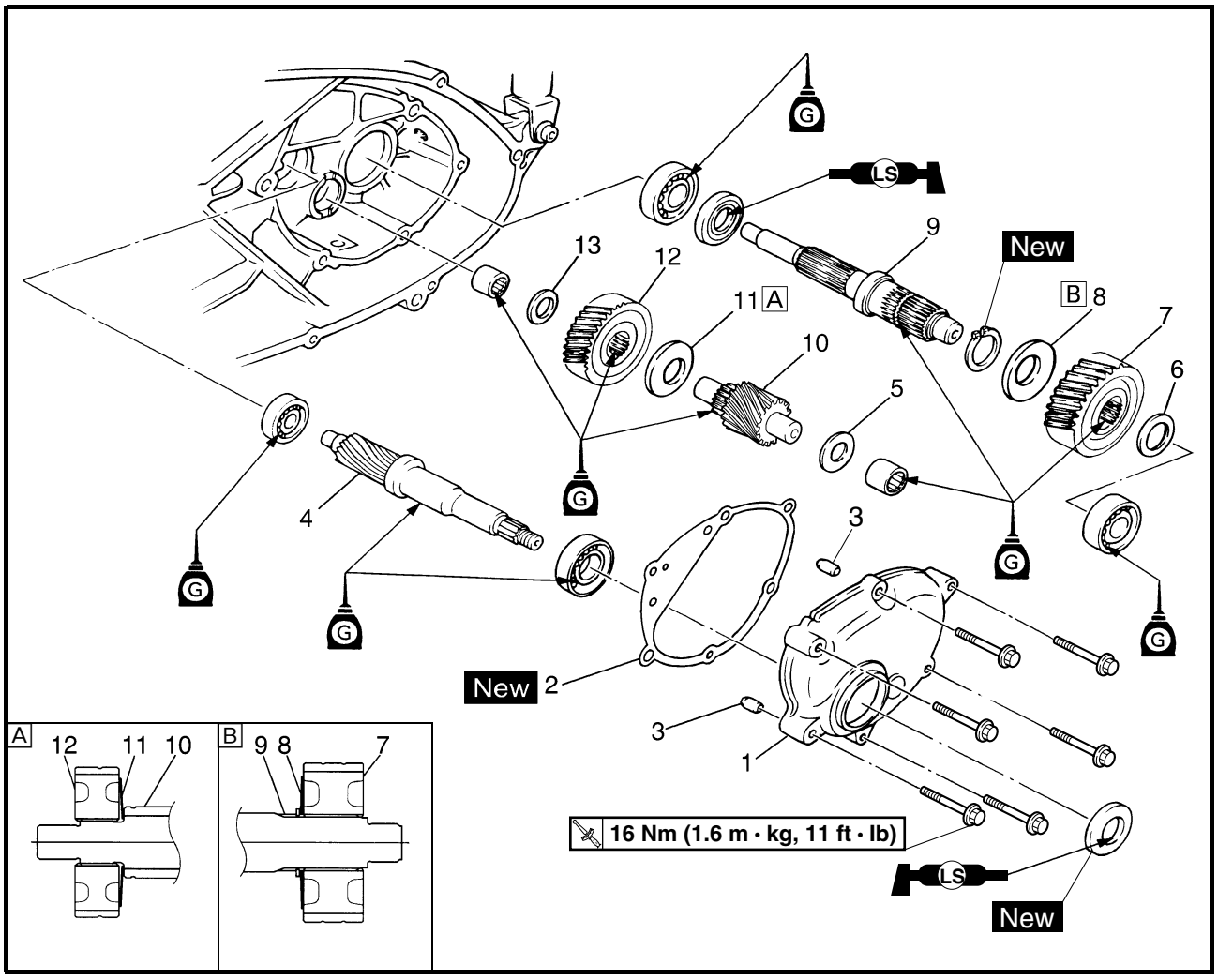
1. Install:
   - oil pump gasket New
   - oil pump assembly

7 Nm (0.7 m · kg, 5.1 ft · lb)

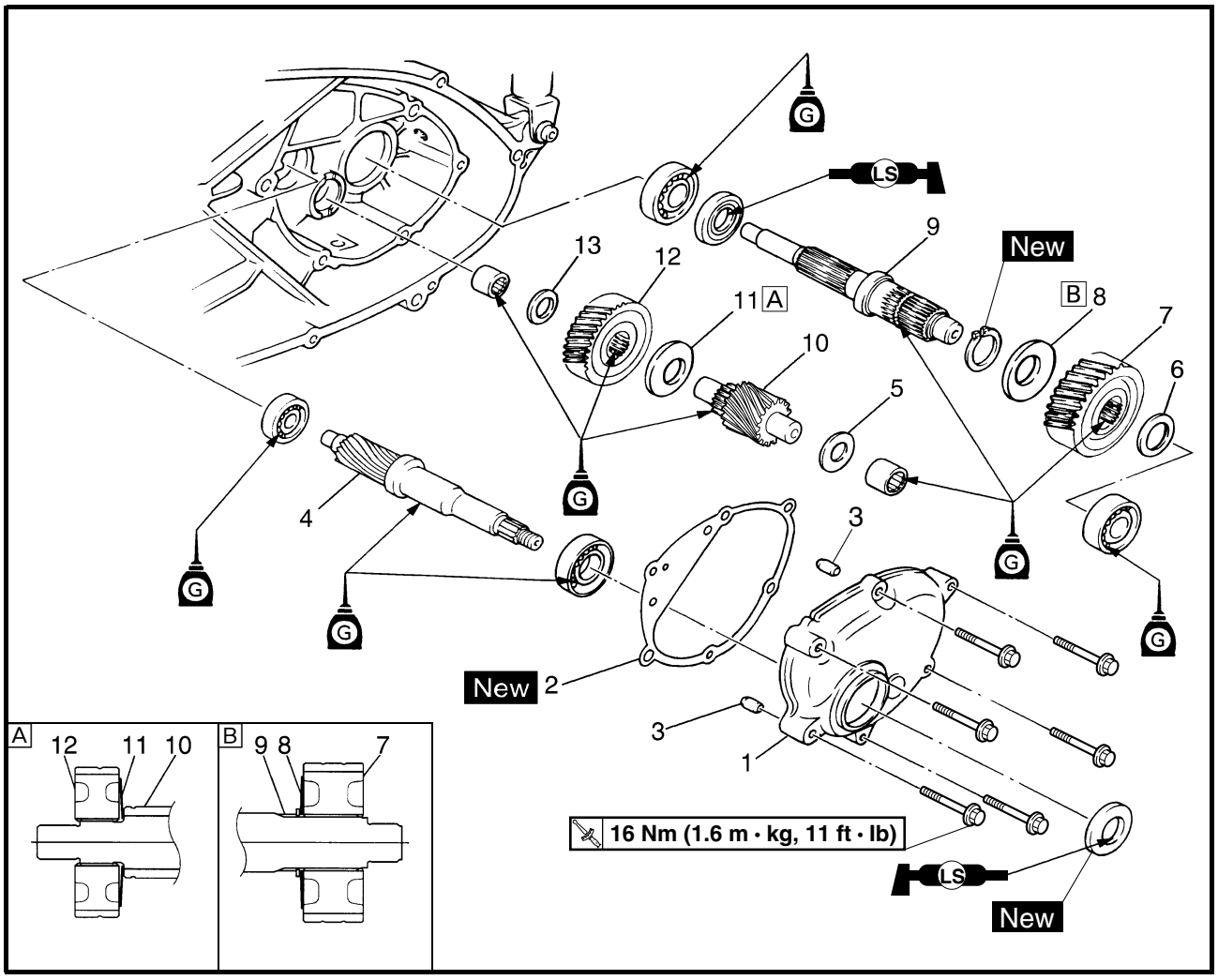
CAUTION:

After tightening the bolts, make sure the oil pump turns smoothly.

TRANSMISSION



Order	Job/Part	Q'ty	Remarks
	Removing the transmission		Remove the parts in the order listed.
	Final transmission oil		Drain. Refer to "CHANGING THE FINAL TRANSMISSION OIL" in chapter 3.
	Rear wheel		Refer to "REAR WHEEL AND BRAKE DISC" in chapter 4.
	Secondary sheave assembly		Refer to "BELT DRIVE".
1	Transmission case cover	1	
2	Transmission case cover gasket	1	
3	Dowel pin	2	
4	Primary drive gear	1	
5	Washer	1	
6	Washer	1	
7	1st wheel gear	1	



Order	Job/Part	Q'ty	Remarks
8	Conical spring washer	1	
9	Drive axle	1	
10	Main axle	1	
11	Conical spring washer	1	
12	Primary driven gear	1	
13	Washer	1	
			For installation, reverse the removal procedure.

REMOVING THE TRANSMISSION

1. Remove:
   - transmission case cover

NOTE:

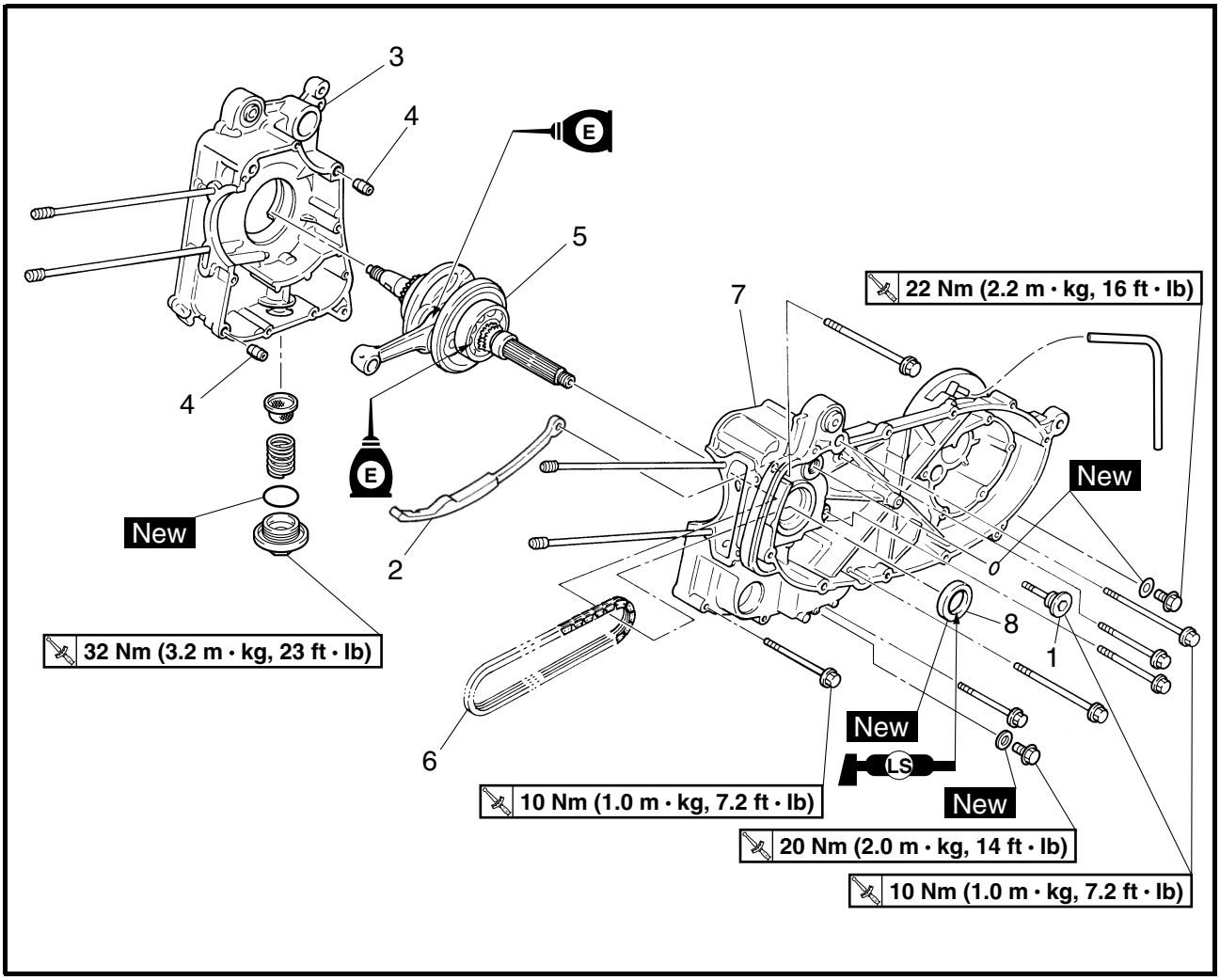
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, removed them.

EAS00425

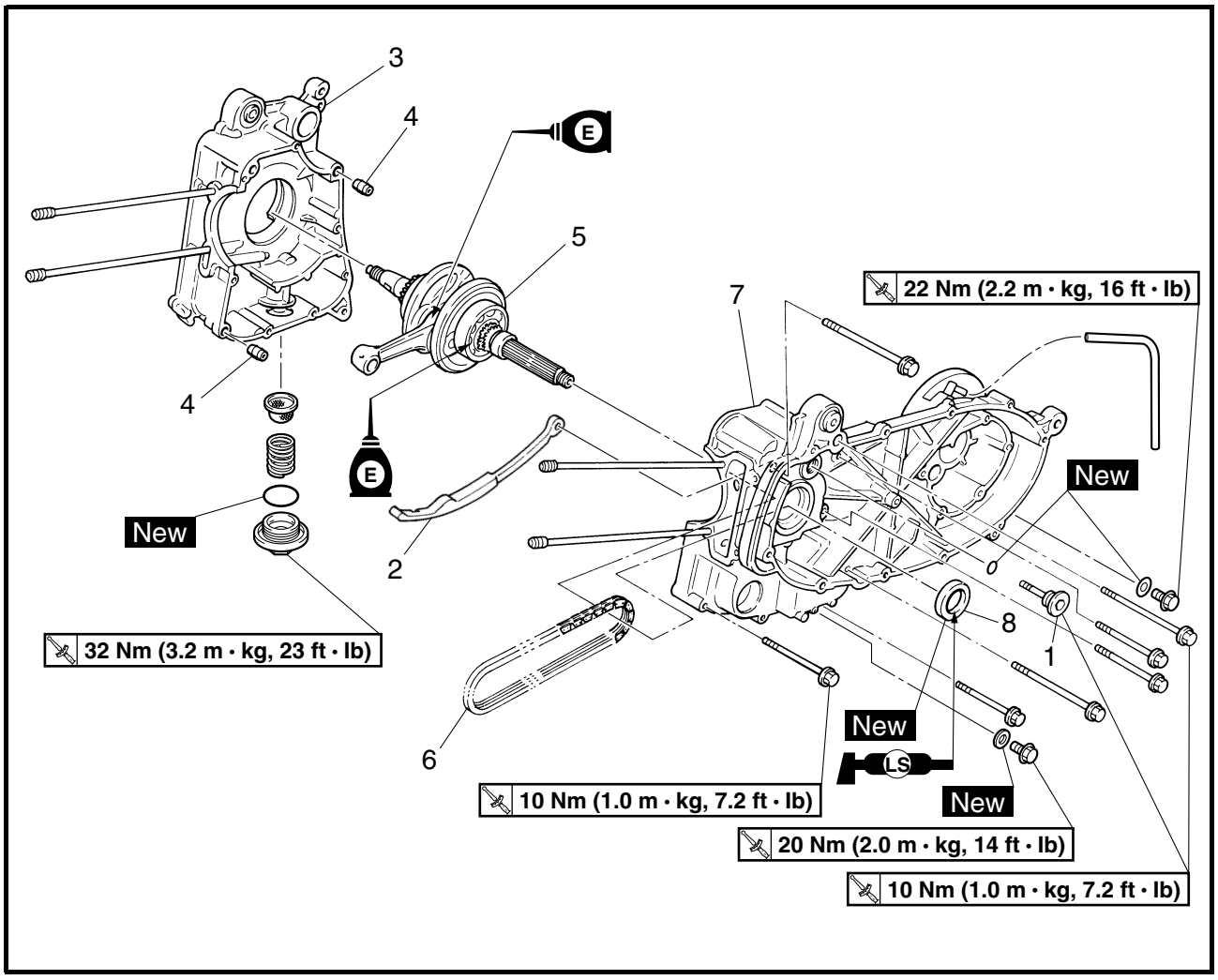
CHECKING THE TRANSMISSION

1. Check:
   - transmission gears
     Blue discoloration/pitting/wear → Replace the defective gear(s).
   - transmission gear dogs
     Cracks/damage/rounded edges → Replace the defective gear(s).
2. Check:
   - transmission gear movement
     Rough movement → Replace the defective part(s).
3. Check:
   - circlips
     Bends/damage/looseness → Replace.

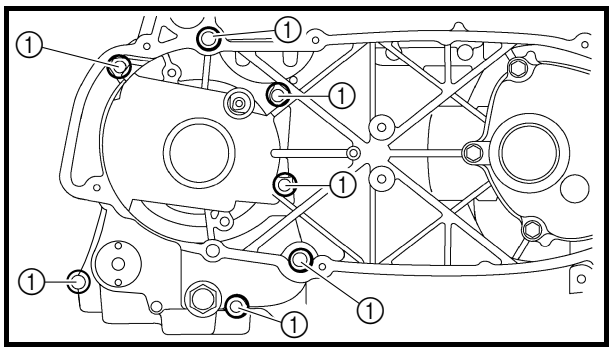
EAS00381
CRANKSHAFT
CRANKSHAFT ASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Removing the crankshaft		Remove the parts in the order listed.
	Water pump assembly		Refer to "WATER PUMP" in chapter 6.
	Engine		Refer to "ENGINE".
	Cylinder head		Refer to "CYLINDER HEAD".
	Piston		Refer to "CYLINDER AND PISTON".
	Secondary sheave assembly		Refer to "BELT DRIVE".
	Starter clutch gear		Refer to "STARTER CLUTCH AND GENERATOR".
	Oil pump assembly		Refer to "OIL PUMP".
	Transmission		Refer to "TRANSMISSION".
1	Timing chain guide retaining bolt	1	
2	Timing chain guide (intake side)	1	
3	Right crankcase	1	
4	Dowel pin	2	



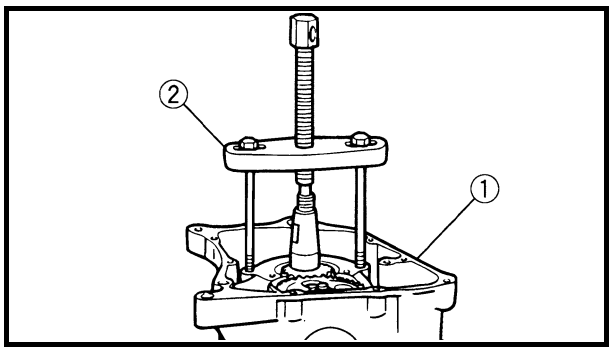
Order	Job/Part	Q'ty	Remarks
5	Crankshaft assembly	1	
6	Timing chain	1	
7	Left crankcase	1	
8	Oil seal	1	
			For installation, reverse the removal procedure.



EAS00385
DISASSEMBLING THE CRANKCASE

1. Remove:
   • crankcase bolts ①

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.



2. Remove:
   • right crankcase ①

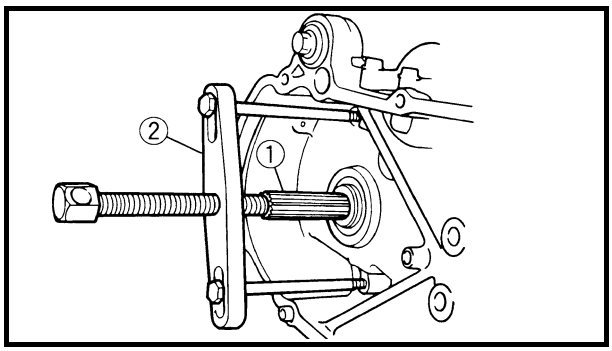
NOTE:
- Remove the right crankcase with the crankcase separating tool ②.
- Make sure that the crankcase separating tool is centered over the crankshaft assembly.

	Crankcase separating tool **90890-01135**

EAS00389
REMOVING THE CRANKSHAFT ASSEMBLY

1. Remove:
   • timing chain

NOTE:
- Before removing the crankshaft, remove the timing chain from the crankshaft sprocket.
- The crankshaft cannot be removed if the timing chain is attached onto the crankshaft sprocket.

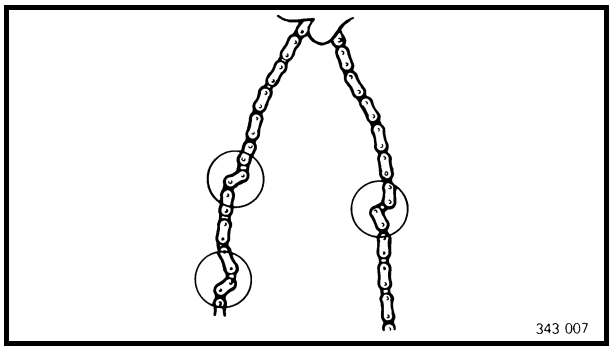


2. Remove:
   • crankshaft assembly ①

NOTE:
- Remove the crankshaft assembly with the crankcase separating tool ②.
- Make sure that the crankcase separating tool is centered over the crankshaft.

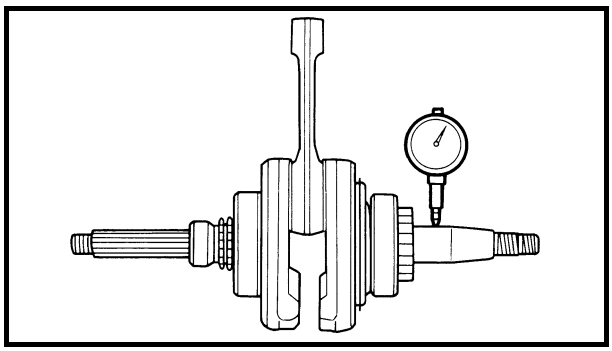
CAUTION:
Do not tap on the crankshaft.

	Crankcase separating tool **90890-01135**



EAS00207
CHECKING THE TIMING CHAIN AND TIMING CHAIN GUIDE

1. Check:
   • timing chain
   Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.
2. Check:
   • timing chain guide (intake side)
   Damage/wear → Replace the defective part(s).

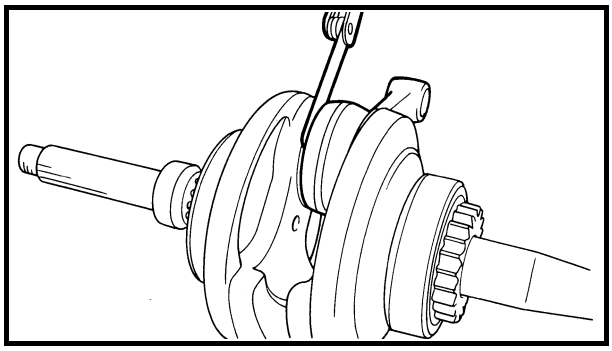


EAS00394
CHECKING THE CRANKSHAFT AND CONNECTING ROD

1. Measure:
   • crankshaft runout
   Out of specification → Replace the crankshaft.

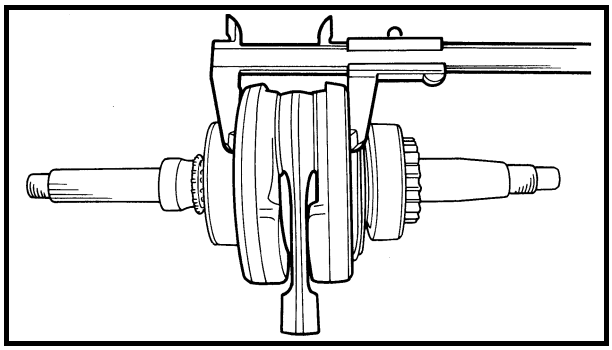
NOTE:
Turn the crankshaft slowly.

Crankshaft runout
0.030 mm (0.0012 in)



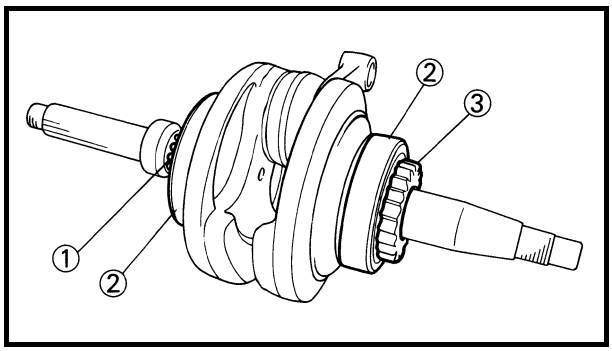
2. Measure:
   • big end side clearance
   Out of specification → Replace the crankshaft.

Big end side clearance
0.350 ~ 0.850 mm
(0.0138 ~ 0.0335 in)

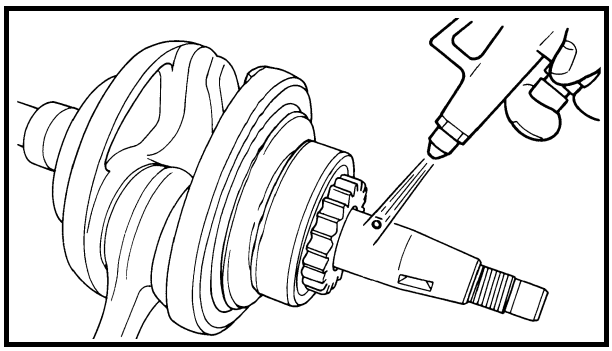


3. Measure:
   • crankshaft width
   Out of specification → Replace the crankshaft.

Crankshaft width
59.75 ~ 59.80 mm
(2.352 ~ 2.354 in)



4. Check:
   • crankshaft sprocket ①
   Damage/wear → Replace the crankshaft.
   • bearing ②
   Cracks/damage/wear → Replace the crankshaft.
   • oil pump drive gear ③
   Damage/wear → Replace the crankshaft.



5. Check:
   • crankshaft journal oil passage
   Obstruction → Blow out with compressed air.

EAS00399
CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
   • crankcase
   Cracks/damage → Replace.
   • oil delivery passages
   Obstruction → Blow out with compressed air.

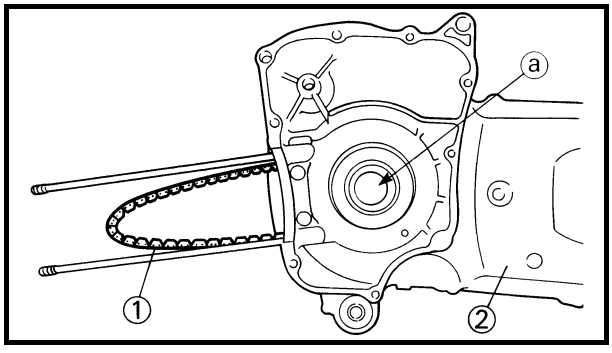
EAS00401
CHECKING THE BEARINGS

1. Check:
   • bearings
   Clean and lubricate the bearings, and then rotate the inner race with your finger.
   Rough movement → Replace.

EAS00408
INSTALLING THE CRANKSHAFT

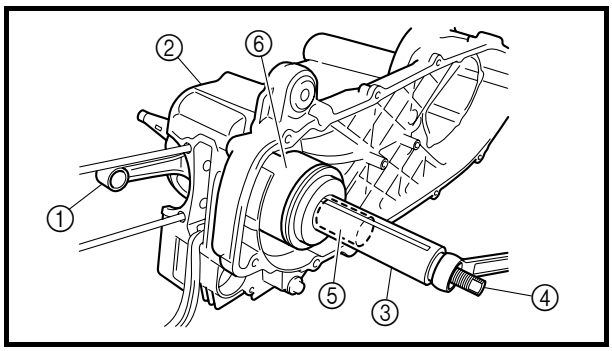
1. Lubricate:
   • oil seals
   • bearings
   • oil pump drive gear

Recommended lubricant
Oil seal
Lithium-soap-based grease
Bearing, oil pump drive gear
Engine oil



2. Install:
   • timing chain ①

NOTE:
Install the timing chain so it is not visible through the opening ⓐ in the left crankcase ②.



3. Install:
   - crankshaft assembly ①
   - left crankcase ②

NOTE:
- Install the crankshaft assembly with the crankshaft installer pot ③, crankshaft installer bolt ④, adapter ⑤, and spacer ⑥.
- After installing the crankcase, make sure that timing chain is securely meshed with the crankshaft sprocket.



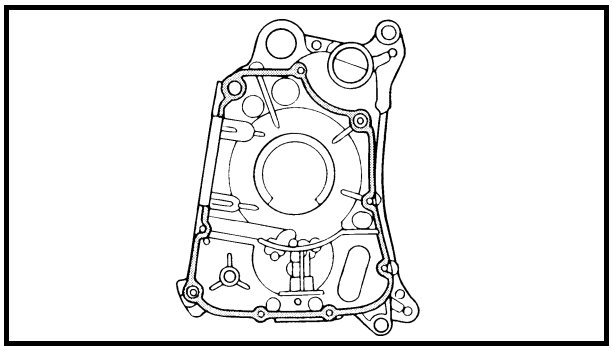
Crankshaft installer pot
90890-01274
Crankshaft installer bolt
90890-01275
Adapter (M14)
90890-01478
Spacer (crankshaft installer)
90890-04081

CAUTION:

To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with lithium-soap-based grease and each bearing with engine oil.

NOTE:

Hold the connecting rod at top dead center (TDC) with one hand while turning the nut of the crankshaft installer bolt with the other. Turn the crankshaft installer bolt until the crankshaft assembly bottoms against the bearing.

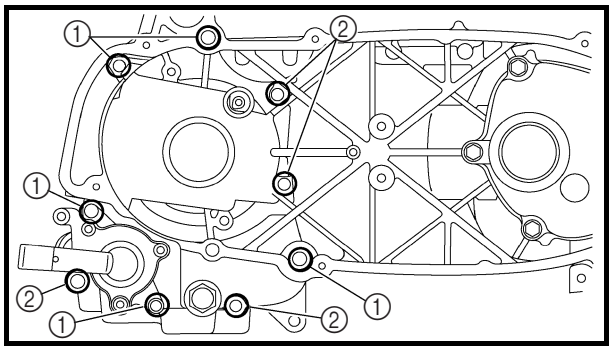


EAS00418
ASSEMBLING THE CRANKCASE

1. Thoroughly clean all the gasket mating surfaces and crankcase mating surfaces.
2. Apply:
   - sealant
     (onto the crankcase mating surfaces)

	Yamaha bond No. 1215 **90890-85505**

NOTE:
Do not allow any sealant to come into contact with the oil gallery.



3. Install:
   - water pump assembly
   - crankcase bolts

10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
Tighten the crankcase bolts in stages and in a crisscross pattern.

- M6 × 100 mm (3.94 in) bolts: ①
- M6 × 70 mm (2.76 in) bolts: ②

CHAPTER 6
COOLING SYSTEM

RADIATOR 6-1
CHECKING THE RADIATOR 6-3
INSTALLING THE RADIATOR 6-3

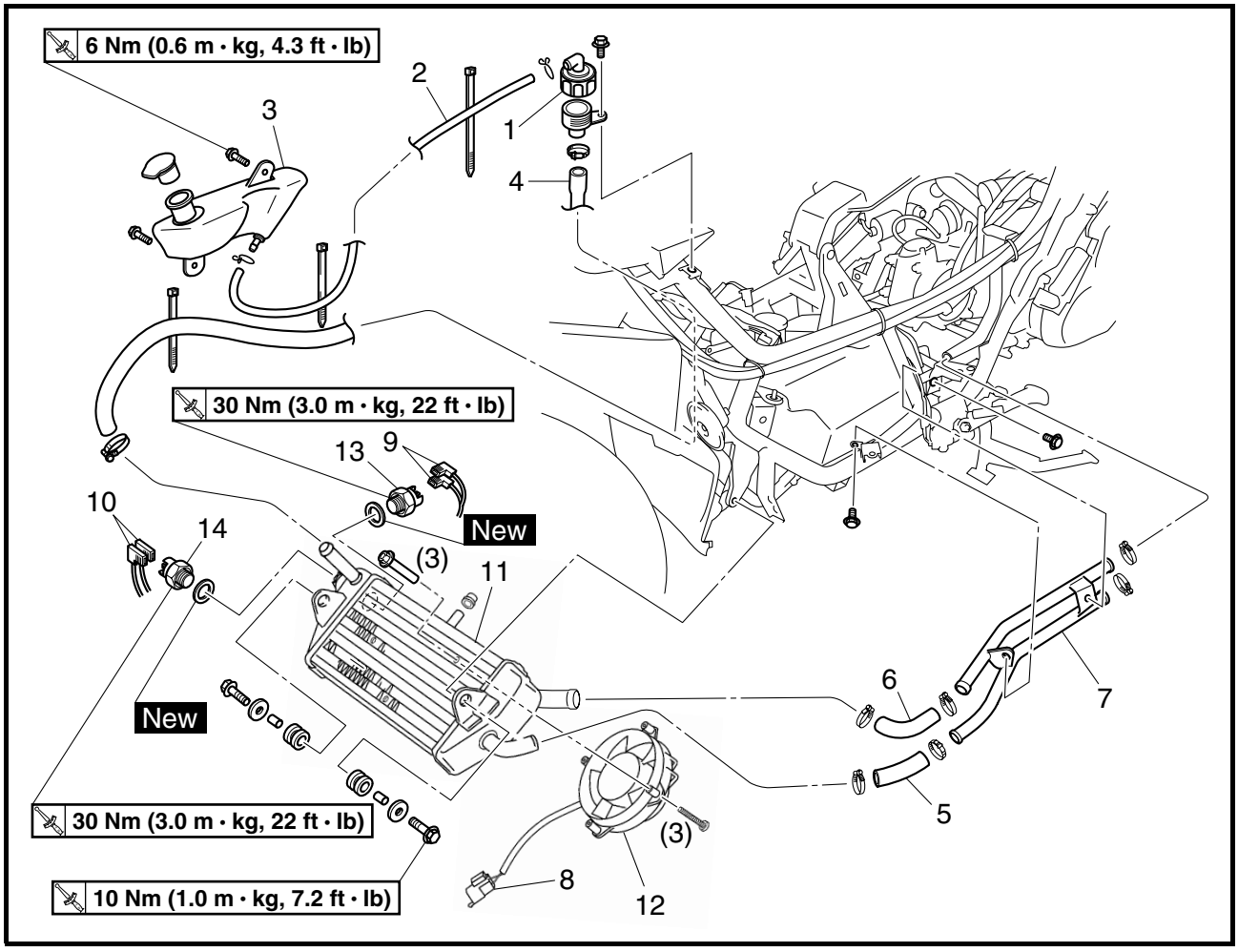
THERMOSTAT 6-4
CHECKING THE THERMOSTAT 6-5
INSTALLING THE THERMOSTAT 6-5

WATER PUMP 6-6
DISASSEMBLING THE WATER PUMP 6-8
CHECKING THE WATER PUMP 6-9
ASSEMBLING THE WATER PUMP 6-9
INSTALLING THE WATER PUMP 6-11

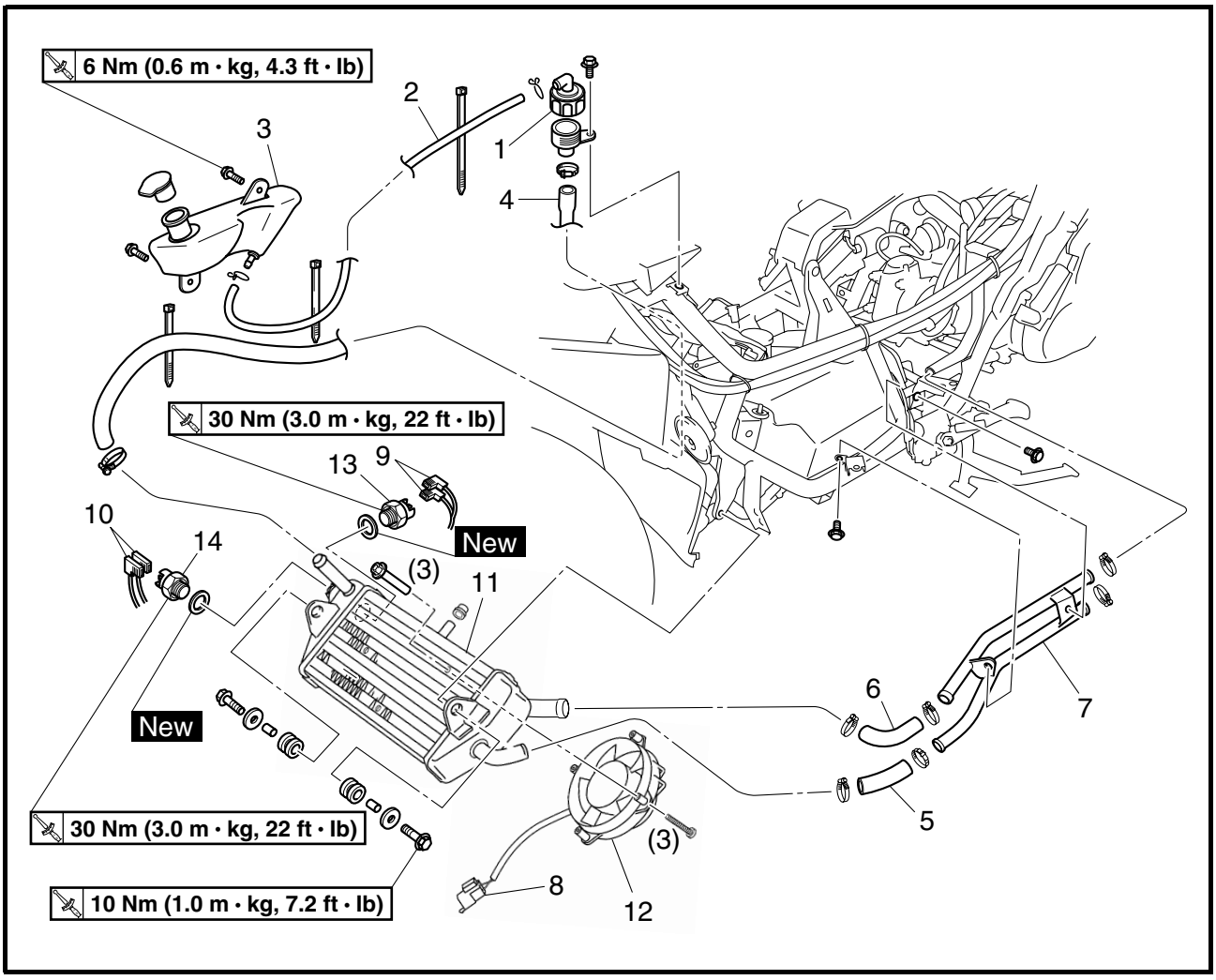
EAS00454

COOLING SYSTEM

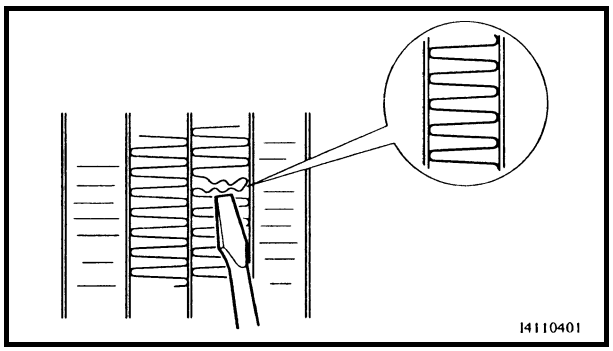
RADIATOR



Order	Job/Part	Q'ty	Remarks
	Removing the radiator		Remove the parts in the order listed.
	Storage compartment/footrest board/ under cover		Refer to "COVERS AND PANELS" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Radiator cap	1	
2	Coolant reservoir hose	1	
3	Coolant reservoir	1	
4	Radiator filler hose	1	
5	Radiator outlet hose	1	
6	Radiator inlet hose	1	
7	Radiator inlet/outlet pipe	1	
8	Radiator fan motor coupler	1	Disconnect.



Order	Job/Part	Q'ty	Remarks
9	Thermo switch connector (auto choke)	2	Disconnect. White.
10	Thermo switch connector (radiator fan motor)	2	Disconnect. Green.
11	Radiator	1	
12	Radiator fan motor	1	
13	Thermo switch (auto choke)	1	White.
14	Thermo switch (radiator fan motor)	1	Green.
			For installation, reverse the removal procedure.



EAS00455
CHECKING THE RADIATOR

1. Check:
   - radiator fins
     Obstruction → Clean.
     Apply compressed air to the rear of the radiator.
     Damage → Repair or replace.

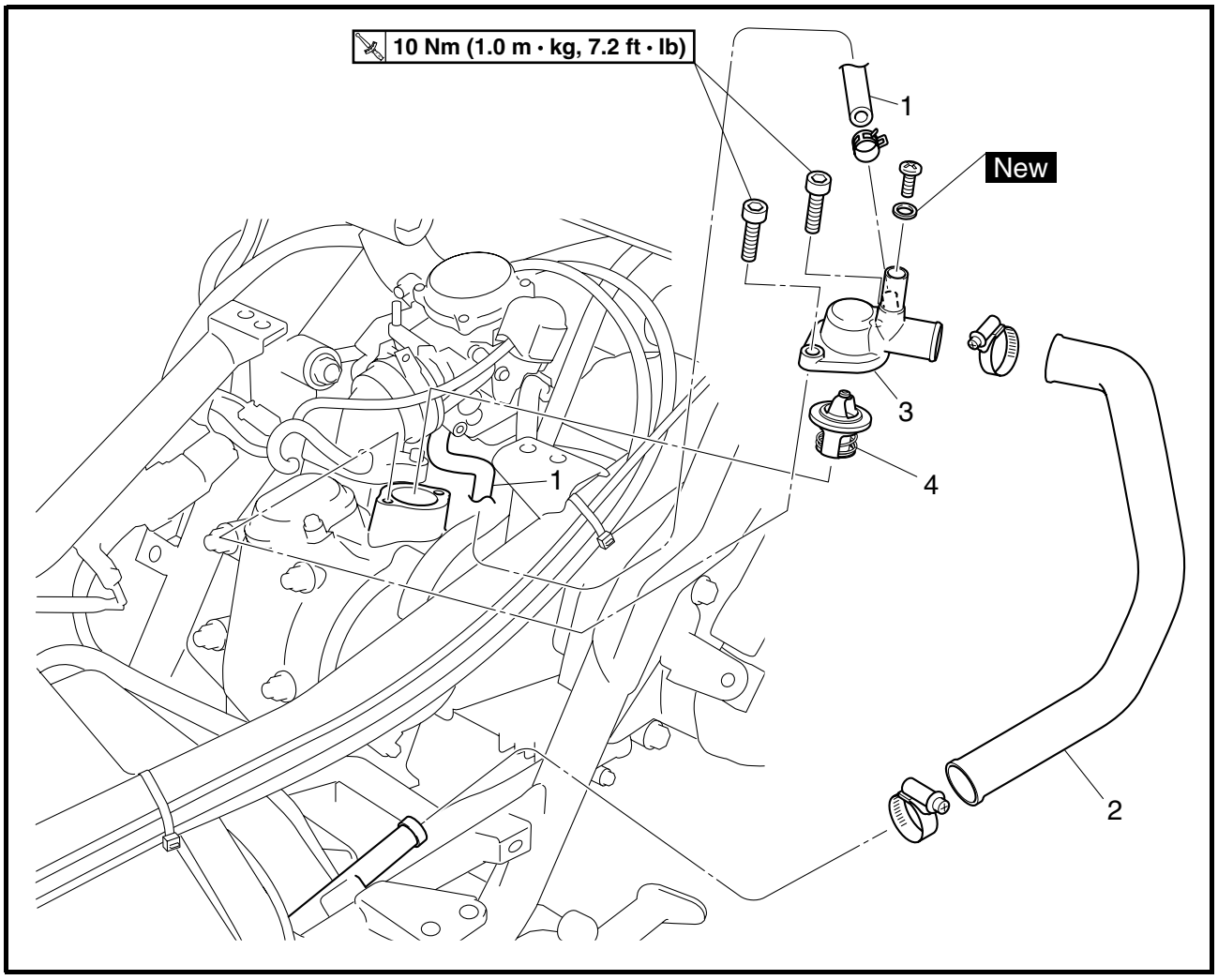
NOTE:
Straighten any flattened fins with a thin, flat-head screwdriver.

2. Check:
   - radiator inlet hose
   - radiator outlet hose
   - radiator filler hose
   - coolant reservoir hose
   - radiator inlet/outlet pipe
     Cracks/damage → Replace.
3. Check:
   - radiator fan motor
     Damage → Replace.
     Malfunction → Check and repair.
     Refer to “COOLING SYSTEM” in chapter 8.

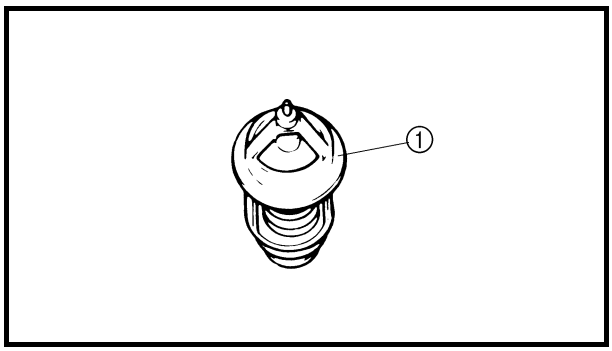
EAS00456
INSTALLING THE RADIATOR

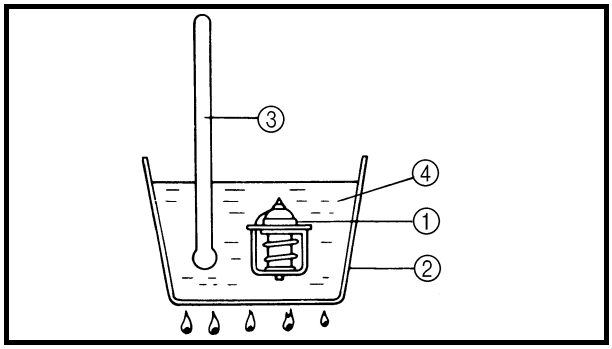
1. Fill:
   - cooling system
     (with the specified amount of the recommended coolant)
     Refer to “CHANGING THE COOLANT” in chapter 3.
2. Check:
   - cooling system
     Leaks → Repair or replace any faulty part.

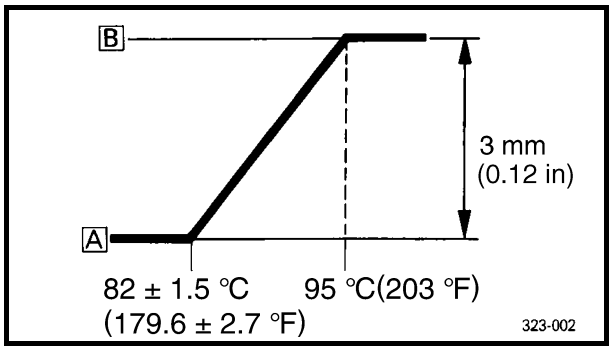
EAS00460
THERMOSTAT



Order	Job/Part	Q'ty	Remarks
	Removing the thermostat		Remove the parts in the order listed.
	Rear side cover (left and right)		Refer to "COVERS AND PANELS" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Thermostat inlet hose	1	Disconnect.
2	Thermostat outlet hose	1	
3	Thermostat cover	1	
4	Thermostat	1	
			For installation, reverse the removal procedure.







EAS00462
CHECKING THE THERMOSTAT

1. Check:
   - thermostat ①
     Does not open at 80.5 ~ 83.5 °C (176.9 ~ 182.3 °F) → Replace.

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a. Suspend the thermostat in a container filled with water.
b. Slowly heat the water.
c. Place a thermometer in the water.
d. While stirring the water, observe the thermostat and thermometer's indicated temperature.

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① Thermostat
② Container
③ Thermometer
④ Water
A Fully closed
B Fully open

NOTE:

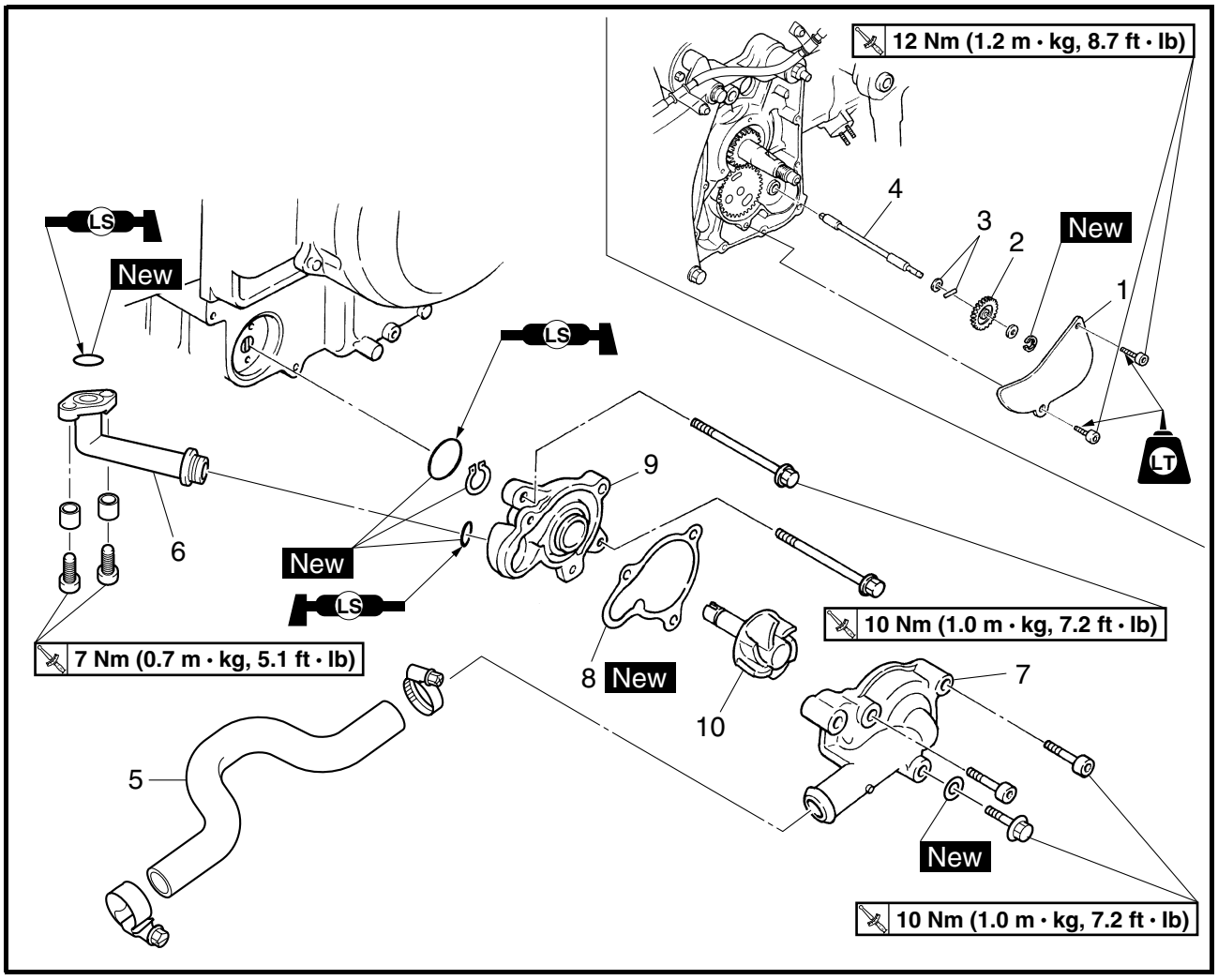
If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

2. Check:
   - thermostat cover
     Cracks/damage → Replace.
3. Check:
   - thermostat inlet hose
   - thermostat outlet hose
     Cracks/damage → Replace.

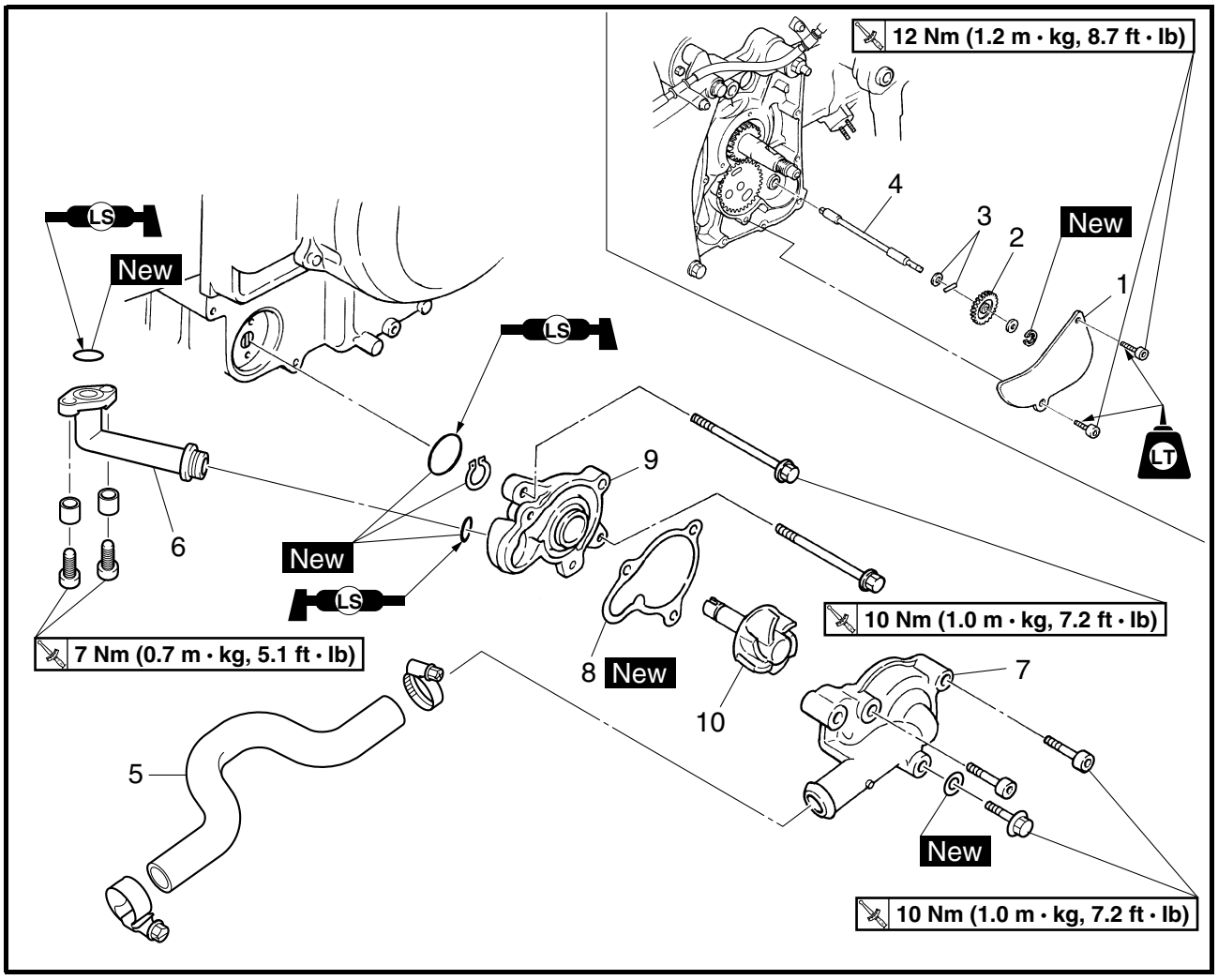
EAS00467
INSTALLING THE THERMOSTAT

1. Fill:
   - cooling system
     (with the specified amount of the recommended coolant)
     Refer to "CHANGING THE COOLANT" in chapter 3.
2. Check:
   - cooling system
     Leaks → Repair or replace any faulty part.

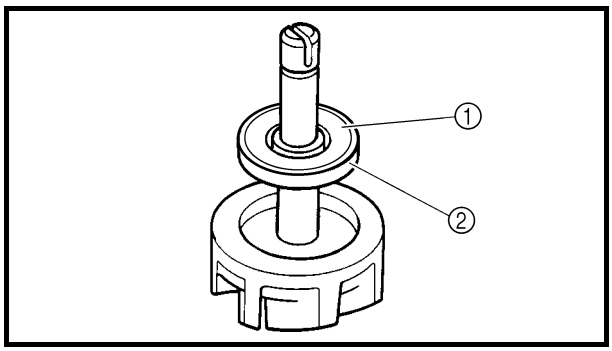
WATER PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the water pump		Remove the parts in the order listed.
			NOTE: It is not necessary to remove the water pump unless the coolant level is extremely low or the coolant contains engine oil.
	Center panel 2 (left)		Refer to "COVERS AND PANELS" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
	Generator rotor		Refer to "STARTER CLUTCH AND GENERATOR" in chapter 5.



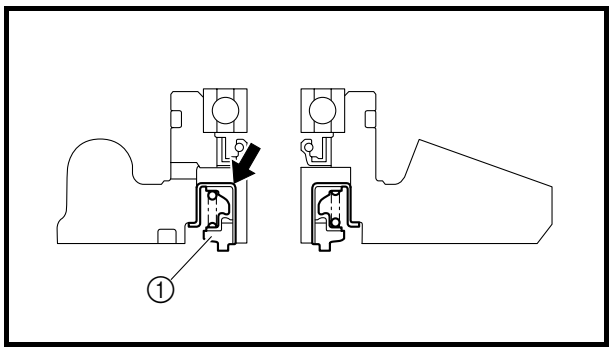
Order	Job/Part	Q'ty	Remarks
1	Oil baffle plate	1	
2	Impeller shaft gear	1	
3	Dowel pin/Washer	1/1	
4	Shaft	1	
5	Water pump inlet hose	1	
6	Water pump outlet pipe	1	
7	Water pump housing cover	1	
8	Water pump housing gasket	1	
9	Water pump housing	1	
10	Impeller shaft	1	
			For installation, reverse the removal procedure.



EAS00471
DISASSEMBLING THE WATER PUMP

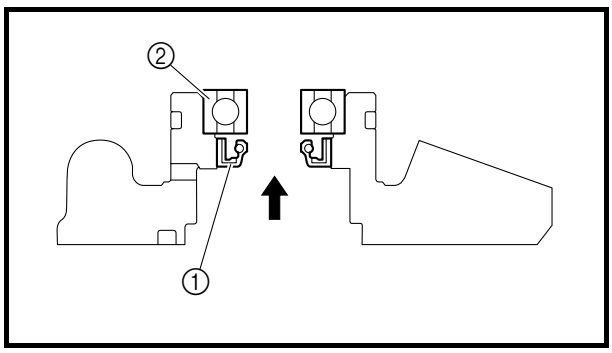
1. Remove:
   - rubber damper holder ①
   - rubber damper ②
     (from the impeller with a thin, flathead screwdriver)

NOTE:
Do not scratch the impeller shaft.



2. Remove:
   - water pump seal ①

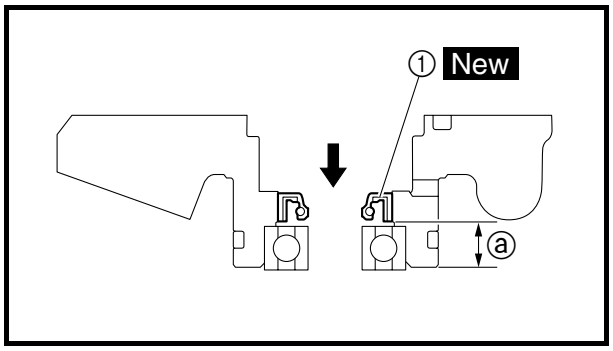
NOTE:
Remove the water pump seal from the inside of the water pump housing.



3. Remove:
   - oil seal ①
   - bearing ②
     (with a thin, flathead screwdriver)

NOTE:
Remove the oil seal and bearing from the outside of the water pump housing.

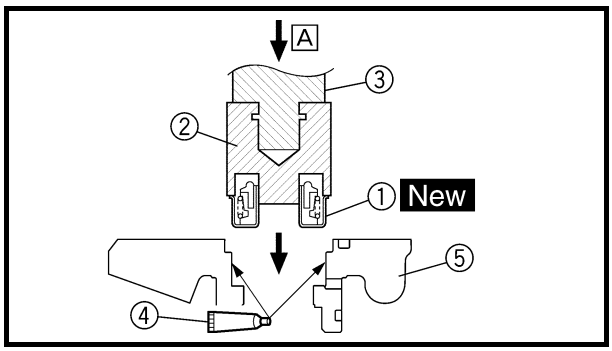
EAS00474
CHECKING THE WATER PUMP
1. Check:
   - water pump housing cover
   - water pump housing
   - impeller shaft
     Cracks/damage/wear → Replace.
2. Check:
   - bearing
     Rough movement → Replace.
3. Check:
   - impeller shaft gear
     Pitting/wear → Replace.
4. Check:
   - water pump inlet hose
   - water pump outlet pipe
     Cracks/damage/wear → Replace.



EAS00475
ASSEMBLING THE WATER PUMP
1. Install:
   - oil seal ① New
     (into the water pump housing)

NOTE:
- Before installing the oil seal, apply tap water or coolant onto its outer surface.
- Install the oil seal with a socket that matches its outside diameter.

Installed depth of oil seal ⓐ
8.1 ~ 8.7 mm (0.32 ~ 0.34 in)



2. Install:
   • water pump seal ① New

CAUTION:

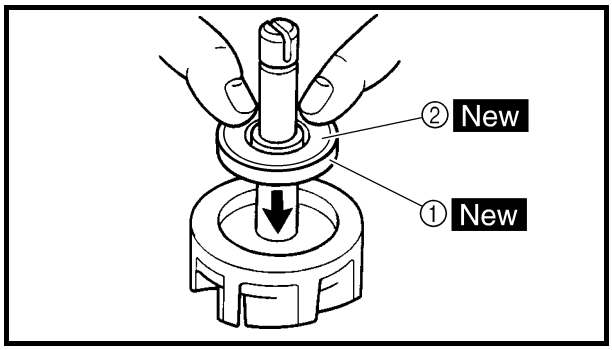
Never lubricate the water pump seal surface with oil or grease.

NOTE:

- Install the water pump seal with the mechanical seal installer ② and middle driven shaft bearing driver ③.
- Before installing the water pump seal, apply Yamaha bond No.1215 ④ to the water pump housing ⑤.

Mechanical seal installer
90890-04132
Middle driven shaft bearing driver
90890-04058
Yamaha bond No.1215
90890-85505

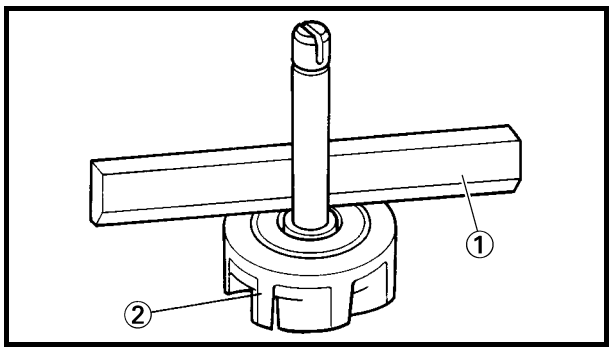
A Push down.



3. Install:
   • rubber damper ① New
   • rubber damper holder ② New

NOTE:

Before installing the rubber damper, apply tap water or coolant onto its outer surface.



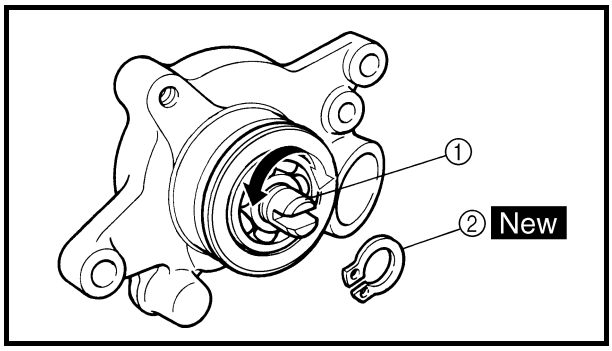
4. Measure:
   - impeller shaft tilt
     Out of specification → Repeat steps (3) and (4).

CAUTION:

Make sure the rubber damper and rubber damper holder are flush with the impeller.

Impeller shaft tilt limit
0.15 mm (0.0059 in)

① Straightedge
② Impeller



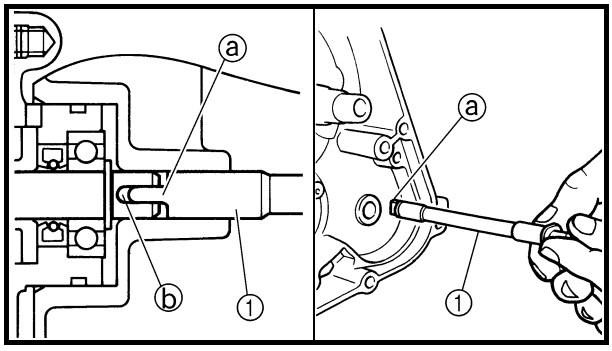
5. Install:
   - impeller shaft ①
   - circlip ② New

NOTE:

After installation, check that the impeller shaft rotates smoothly.

6. Install:
   - water pump housing cover

10 Nm (1.0 m · kg, 7.2 ft · lb)



INSTALLING THE WATER PUMP

1. Install:
   - shaft ①

NOTE:

Align the projection ⓐ on the shaft ① with the slot ⓑ in the impeller shaft.

2. Install:
   • water pump

	10 Nm (1.0 m · kg, 7.2 ft · lb)

3. Fill:
   • cooling system
   (with the specified amount of the recommended coolant)
   Refer to “CHANGING THE COOLANT” in chapter 3.
4. Check:
   • cooling system
   Leaks → Repair or replace any faulty part.

CHAPTER 7
CARBURETOR

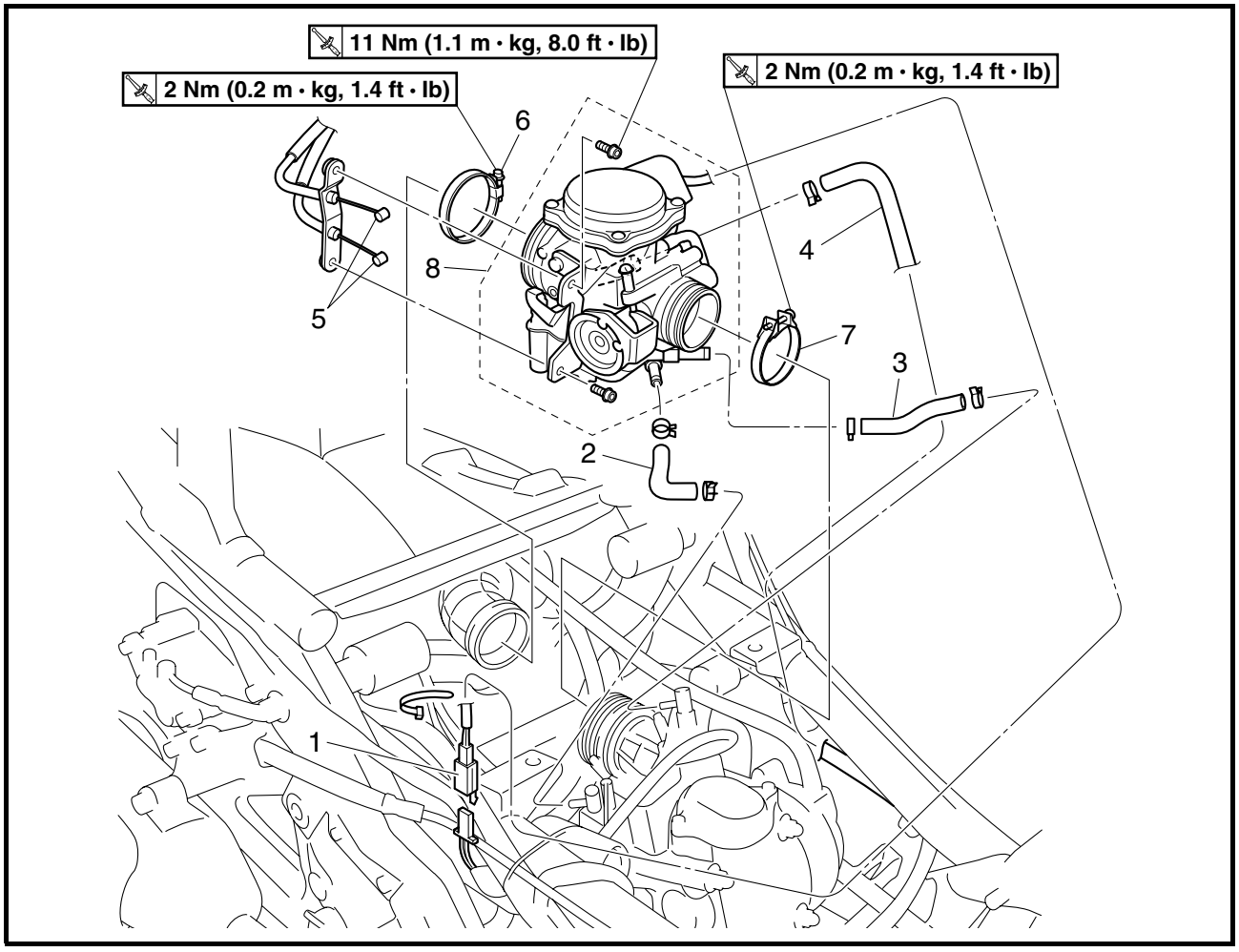
CARBURETOR.....7-1
DISASSEMBLING THE CARBURETOR.....7-5
CHECKING THE CARBURETOR.....7-5
ASSEMBLING THE CARBURETOR.....7-6
INSTALLING THE CARBURETOR.....7-7
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AIR INDUCTION SYSTEM.....7-10
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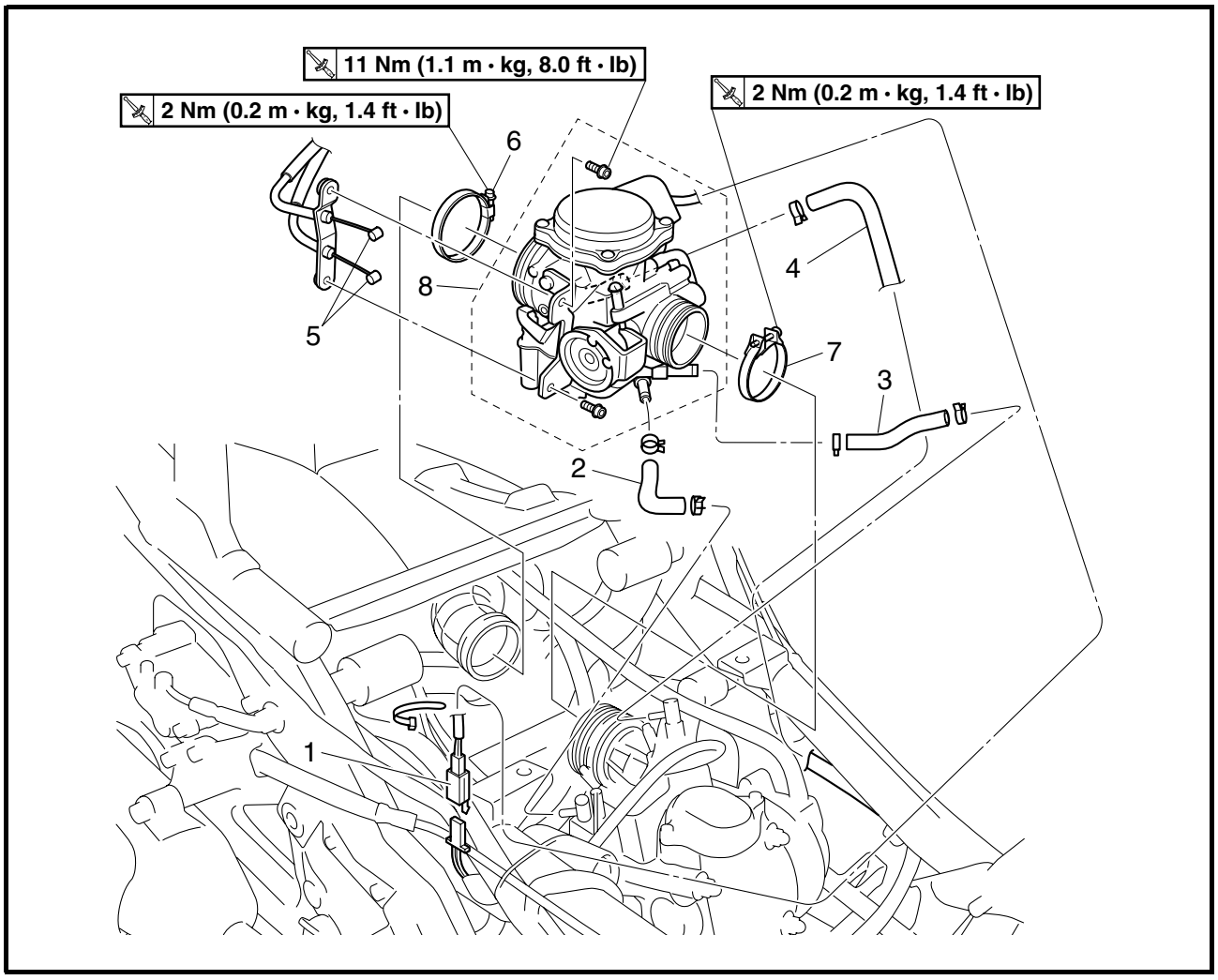
FUEL TANK.....7-12
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CHECKING THE FUEL PUMP.....7-14
INSTALLING THE FUEL SENDER.....7-15

CARBURETOR

CARBURETOR

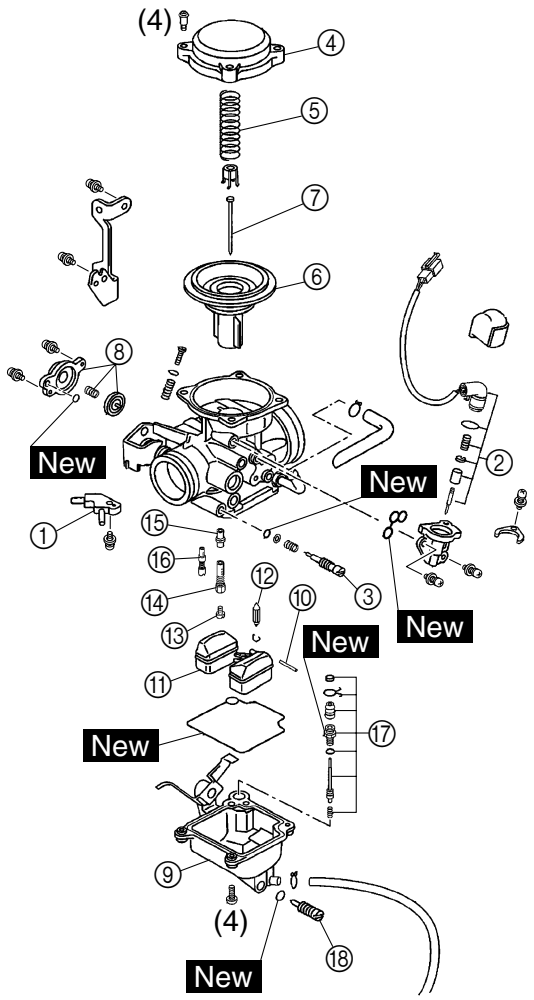


Order	Job/Part	Q'ty	Remarks
	Removing the carburetor		Remove the parts in the order listed.
	Storage box/footrest board		Refer to "COVERS AND PANELS" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Auto choke unit coupler	1	Disconnect.
2	Carburetor inlet hose	1	Disconnect
3	Thermostat inlet hose	1	Disconnect
4	Fuel hose (fuel pump to carburetor)	1	Disconnect
5	Throttle cable	2	Disconnect
6	Air filter case clamp screw	1	Loosen.
7	Carburetor clamp screw	1	Loosen.

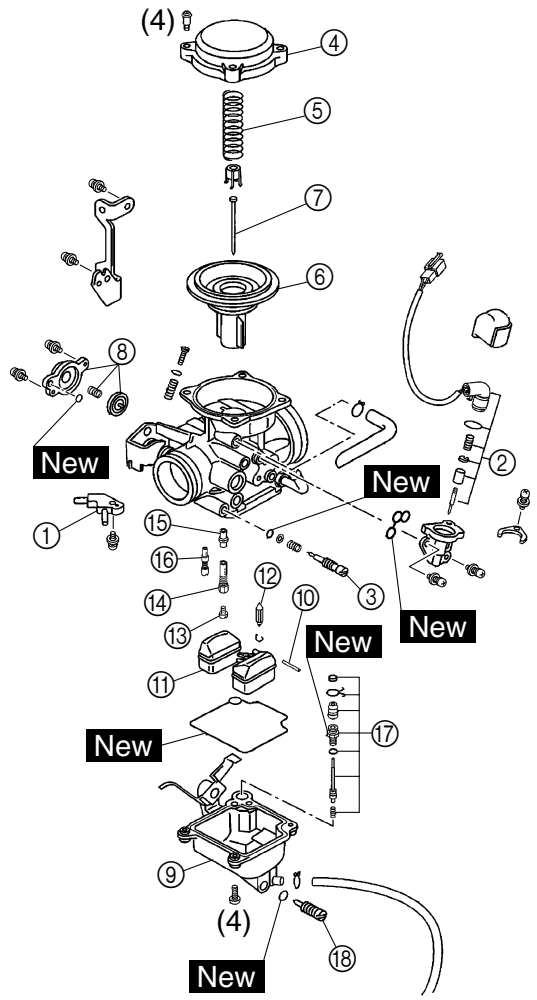


Order	Job/Part	Q'ty	Remarks
8	Carburetor	1	Refer to "INSTALLING THE CARBURETOR" For installation, reverse the removal procedure.

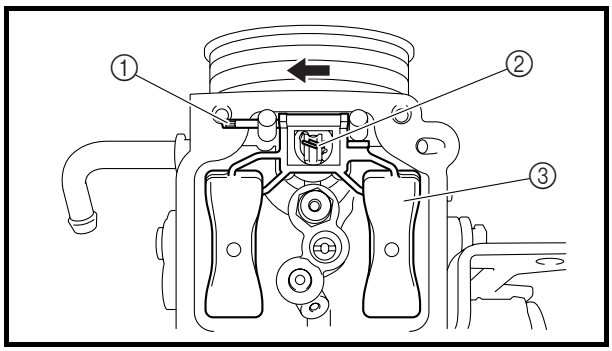
EAS00483

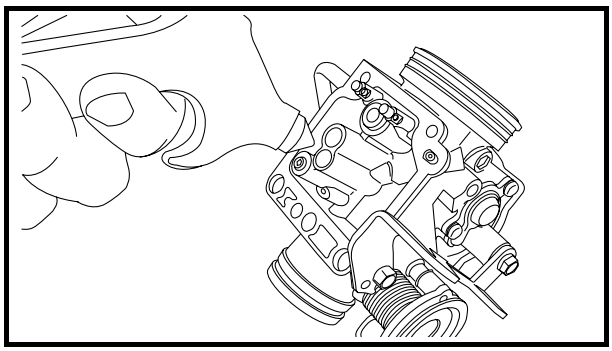


Order	Job/Part	Q'ty	Remarks
	Disassembling the carburetor		Remove the parts in the order listed.
①	Coolant hose joint	1	
②	Auto choke unit	1	
③	Pilot screw	1	
④	Vacuum chamber cover	1	
⑤	Piston valve spring	1	
⑥	Piston valve	1	
⑦	Jet needle	1	
⑧	Coasting enricher assembly	1	
⑨	Float chamber	1	
⑩	Float pin	1	
⑪	Float	1	
⑫	Needle valve	1	
⑬	Main jet	1	



Order	Job/Part	Q'ty	Remarks
⑭	Needle jet holder	1	
⑮	Needle jet	1	
⑯	Pilot jet	1	
⑰	Accelerator pump assembly	1	
⑱	Fuel drain screw	1	
			For assembly, reverse the disassembly procedure.





DISASSEMBLING THE CARBURETOR

1. Remove:
   - float pin ①
   - needle valve ②
   - float ③

NOTE:

Remove the float pin in the direction of the arrow.

EAS00485

CHECKING THE CARBURETOR

1. Check:
   - carburetor body
   - float chamber
   - jet housing

   Cracks/damage → Replace.
2. Check:
   - fuel passages

   Obstruction → Clean.

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a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages and jets with compressed air.

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3. Check:
   - float chamber body

   Dirt → Clean.
4. Check:
   - float

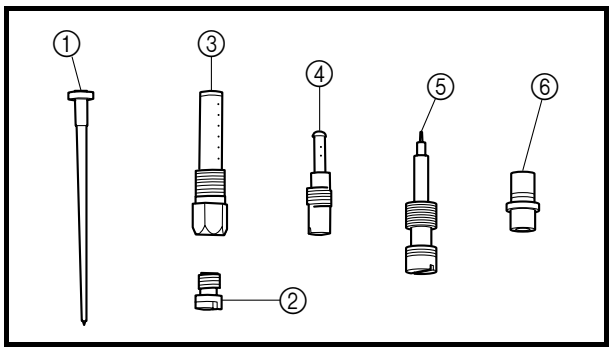
   Damage → Replace.
5. Check:
   - needle valve

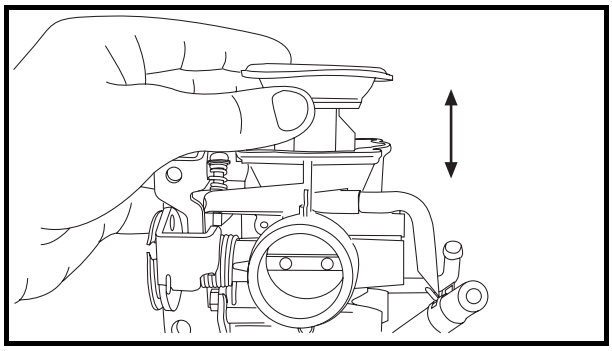
   Damage/obstruction/wear → Replace.
6. Check:
   - piston valve

   Damage/scratches/wear → Replace.
   - piston valve diaphragm
   - coasting enricher diaphragm

   Cracks/tears → Replace.
7. Check:
   - vacuum chamber cover
   - piston valve spring

   Cracks/damage → Replace.





8. Check:
   - jet needle ①
   - main jet ②
   - needle jet holder ③
   - pilot jet ④
   - pilot screw ⑤
   - needle jet ⑥

   Bends/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the jets with compressed air.
9. Check:
   - piston valve movement

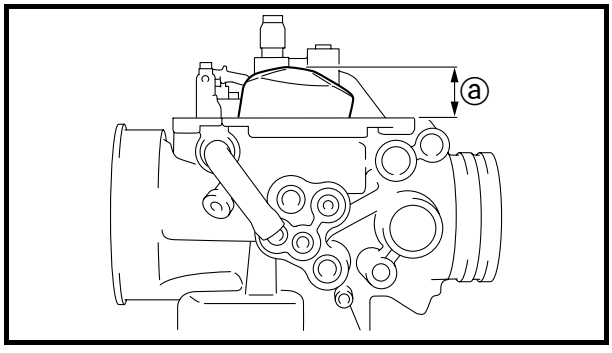
   Insert the piston valve into the carburetor body and move it up and down.
   Tightness → Replace the piston valve.
10. Check:
   - fuel hoses

   Cracks/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the hoses with compressed air.

EAS00487
ASSEMBLING THE CARBURETOR

CAUTION:

- **Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.**
- **Always use a new gasket.**



1. Measure:
   - float height ⓐ

   Out of specification → Adjust.

	Float height (F.H) **17.5 mm (0.69 in)**

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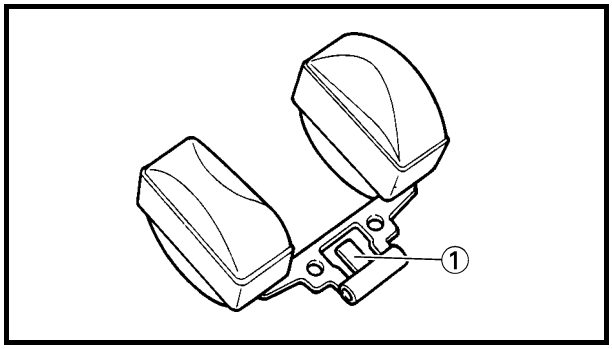
a. Hold the carburetor in an upside down position.

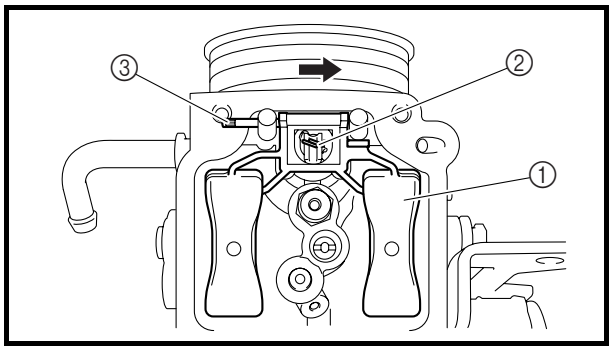
b. Measure the distance from the front mating surface of the float chamber (gasket removed) to the top of the float.

NOTE:
The float arm should be resting on the needle valve, but not compressing it.

c. If the float height is not within the specification, check the needle valve.
d. If it is worn, replace it.
e. If it is fine, adjust the float height by bending the float tang ① on the float.
f. Recheck the float height.

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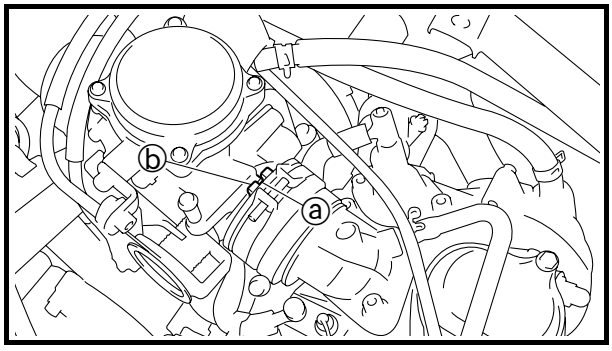
2. Install:
   • float ①
   • needle valve ②
   • float pin ③

NOTE:
Install the float pin in the direction of the arrow.

3. Install:
   • float chamber rubber gasket New
   • float chamber
   • pilot air screw

Pilot air screw
2 turns out

4. Install:
   • accelerator pump assembly
5. Install:
   • coasting enricher assembly



EAS00492
INSTALLING THE CARBURETOR

1. Install
   • carburetor

NOTE:
Align the projection ⓐ on the carburetor with the slot ⓑ on the intake manifold.

2. Adjust:
   • engine idling speed

Engine idling speed
1,550 ~ 1,650 r/min

Refer to "ADJUSTING THE ENGINE IDLING SPEED" in chapter 3.

3. Adjust:
   • throttle cable free play

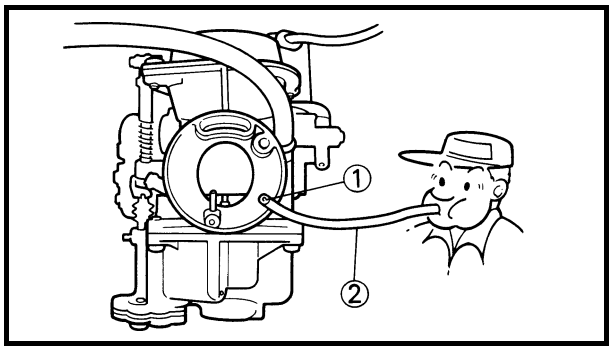
Throttle cable free play
(at the flange of the throttle grip)
4.0 ~ 6.0 mm (0.16 ~ 0.24 in)

Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

EAS00503
CHECKING THE AUTO CHOKE UNIT

NOTE:
When checking the auto choke unit, the ambient temperature must be lower than 45 °C (113 °F).

1. Remove:
   • carburetor



2. Check:
   • auto choke unit

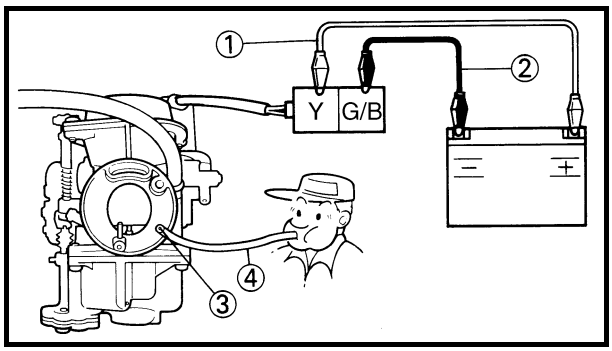
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a. Connect a 3.3 mm (0.13 in) hose ② to the starter air passage ① and blow into the hose.

NOTE:
When the starter plunger is open, air should come out of the other side of the starter air passage.

Starter plunger opens
Perform step (3).
Starter plunger closes
Replace the auto choke unit.

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3. Check:
   • auto choke unit (with battery)

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a. Connect the auto choke unit lead to a 12.0 V battery for five minutes.

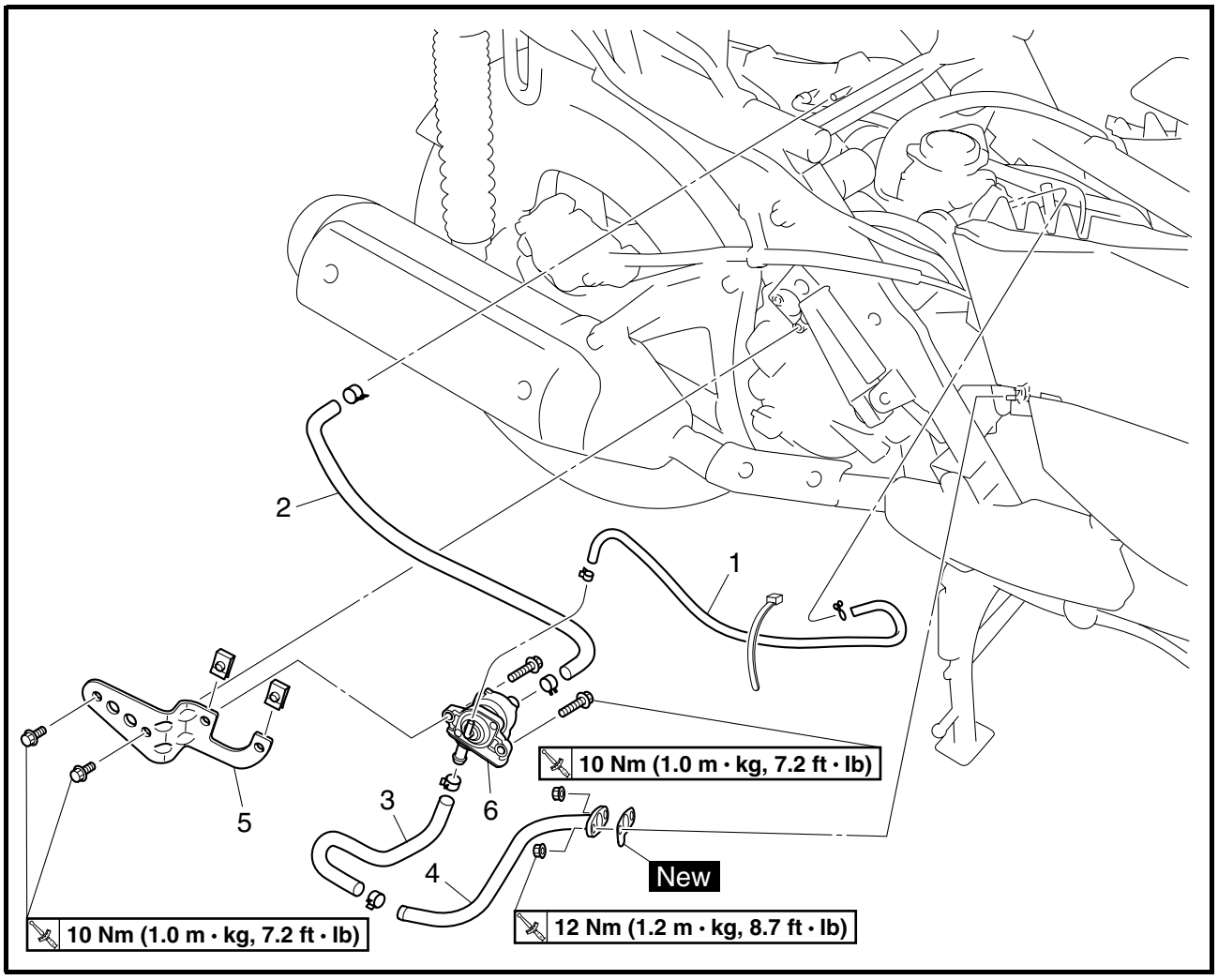
Positive battery lead → yellow ①
Negative battery lead → green/black ②

b. Connect a 3.3 mm (0.13 in) hose ④ to the starter air passage ③ and blow into the hose.

Starter plunger opens
Replace the auto choke unit.
Starter plunger closes
Auto choke unit is OK.

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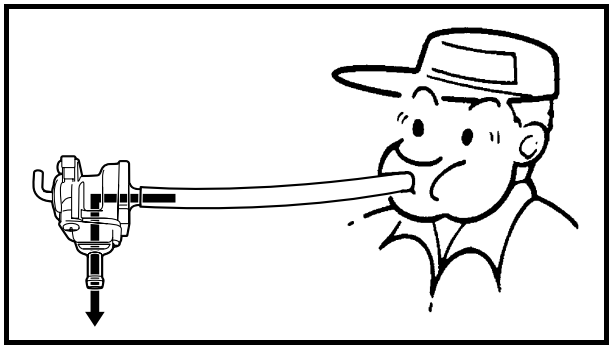
AIR INDUCTION SYSTEM



Order	Job/Part	Q'ty	Remarks
	Removing the air cut-off valve		Remove the parts in the order listed.
	Seat/right center panel 2/under cover		Refer to "COVERS AND PANELS" in chapter 3.
1	Air induction system vacuum hose	1	
2	Air induction system hose (to air cut-off valve assembly)	1	
3	Air induction system hose (air cut-off valve assembly to cylinder head)	1	
4	Air induction system pipe (air cut-off valve assembly to cylinder head)	1	
5	Air cut-off valve bracket	1	
6	Air cut-off valve assembly	1	
			For installation, reverse the removal procedure.

EAS00510
CHECKING THE AIR INDUCTION SYSTEM

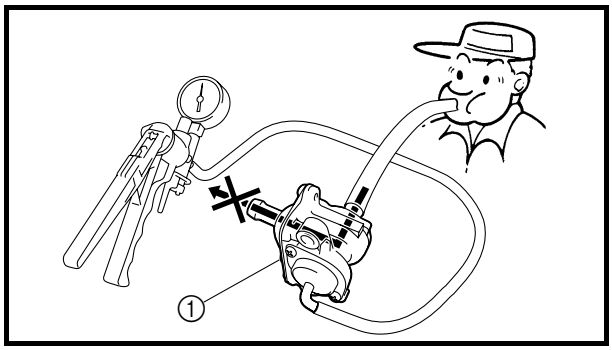
1. Check:
   - hoses
     Loose connection → Connect properly.
     Cracks/damage → Replace.
   - pipe
     Cracks/damage → Replace.
2. Check:
   - air cut-off valve
     Cracks/damage → Replace.
3. Check:
   - air cut-off valve operation
     Does not operate → Replace.



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a. Blow air through the end of the air induction system hose (to air cut-off valve assembly) and check that air flows from the pipe (air cut-off valve assembly to cylinder head).

Air cut-off valve opens
Perform step (b).
Air cut-off valve closes
Replace the air cut-off valve.



b. Install a vacuum/pressure pump to the air-cut off valve ① and apply negative pressure to the valve.



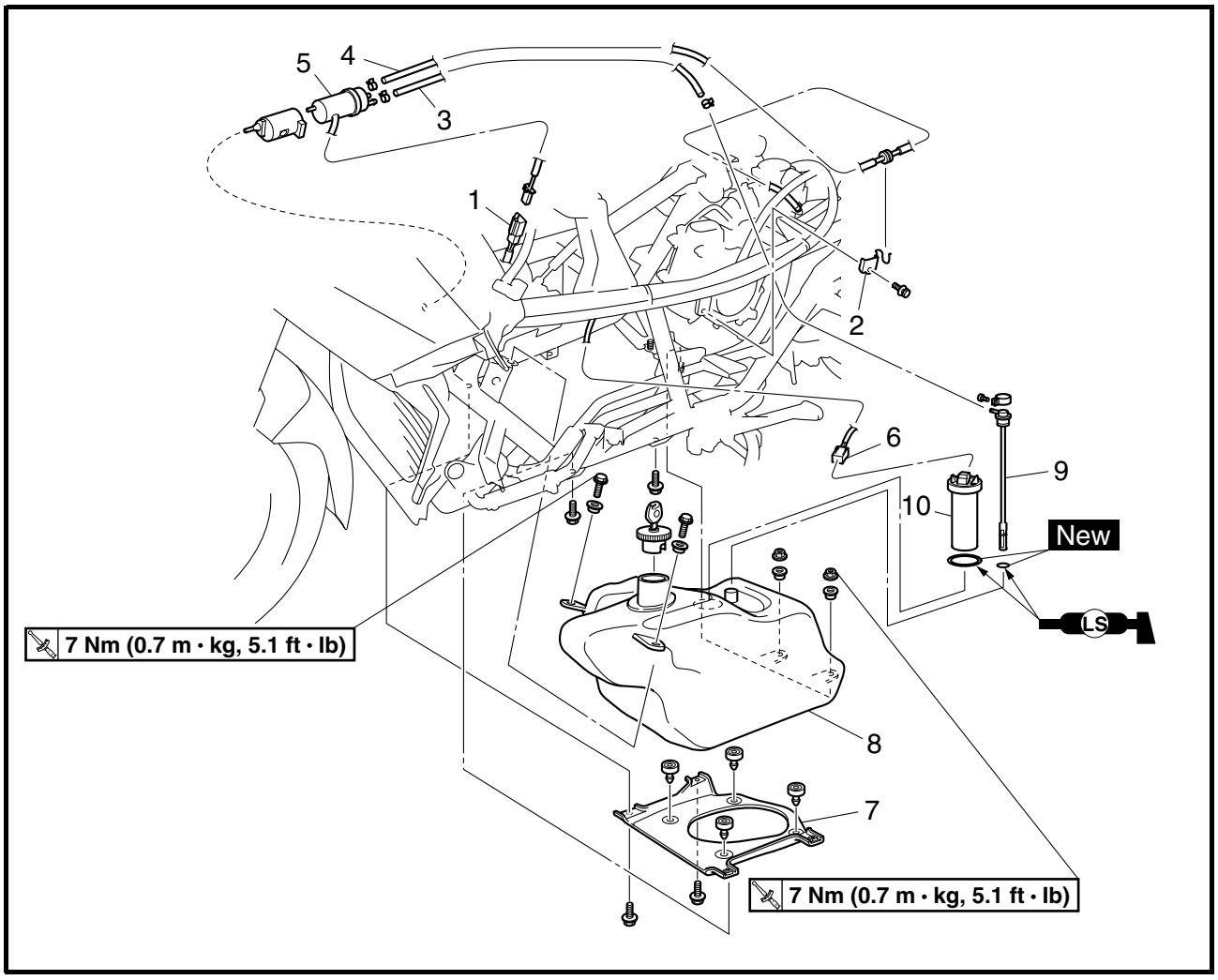
Vacuum/pressure pump gauge set
90890-06756

c. Blow air through the end of the air induction system hose (to air cut-off valve assembly) and check that air does not flow and out through the pipe (air cut-off valve assembly to cylinder head).

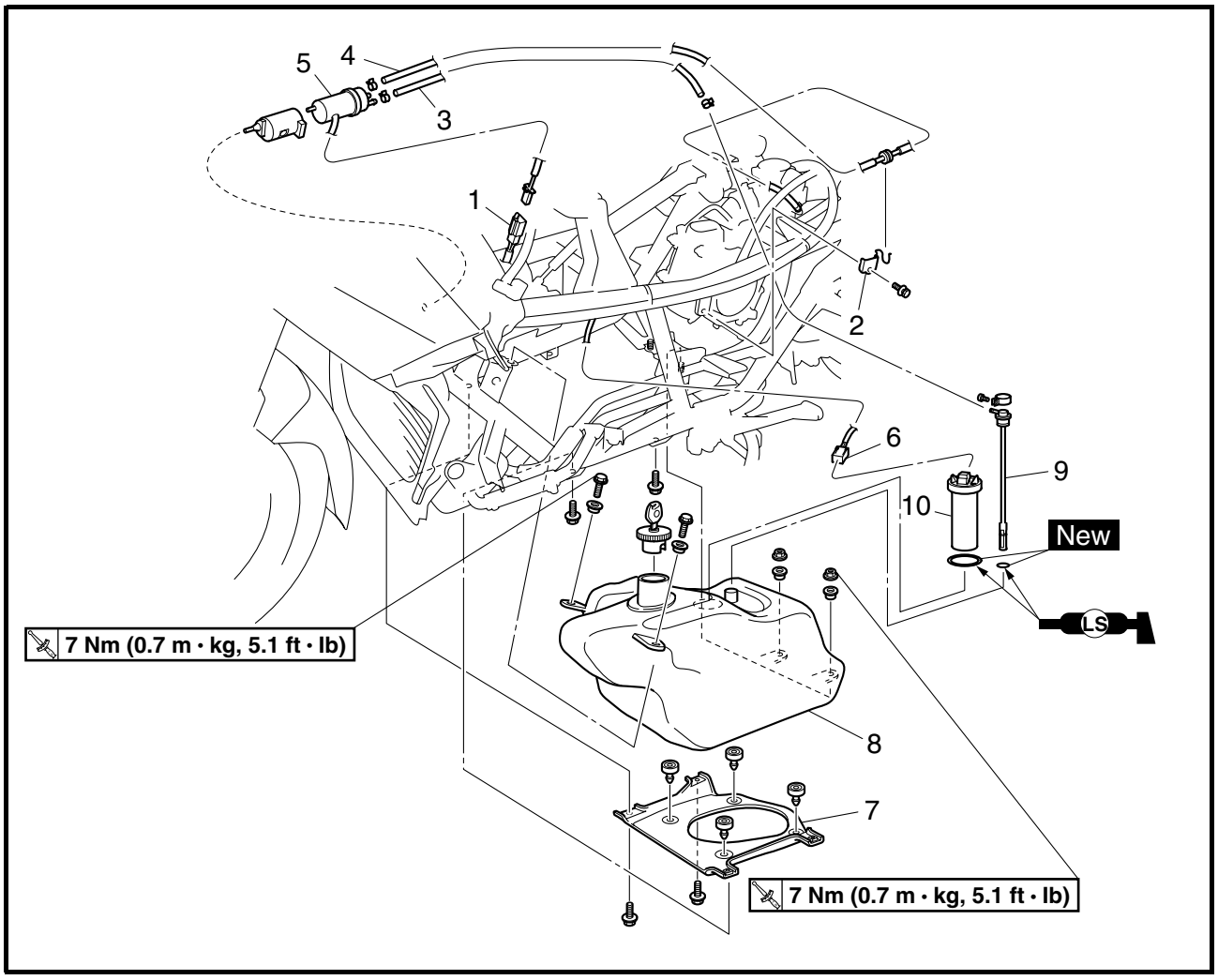
Air cut-off valve opens
Replace the air cut-off valve.
Air cut-off valve closes
Air cut-off valve is OK.

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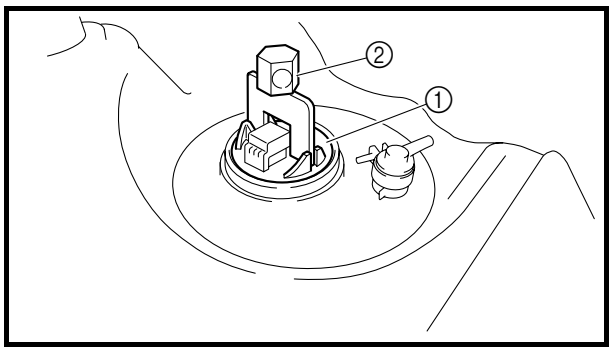
FUEL TANK



Order	Job/Part	Q'ty	Remarks
	Removing the fuel tank		Remove the parts in the order listed.
	Storage box/under cover		Refer to "COVERS AND PANELS" in chapter 3.
1	Fuel pump coupler	1	Disconnect.
2	Fuel hose holder	1	
3	Fuel hose (fuel tank to fuel pump)	1	
4	Fuel hose (fuel pump to carburetor)	1	Disconnect.
5	Fuel pump	1	
6	Fuel sender coupler	1	Disconnect.
7	Fuel tank lower cover	1	
8	Fuel tank	1	
9	Fuel pipe	1	



Order	Job/Part	Q'ty	Remarks
10	Fuel sender	1	Refer to "REMOVING THE FUEL SENDER" and "INSTALLING THE FUEL SENDER". For installation, reverse the removal procedure.



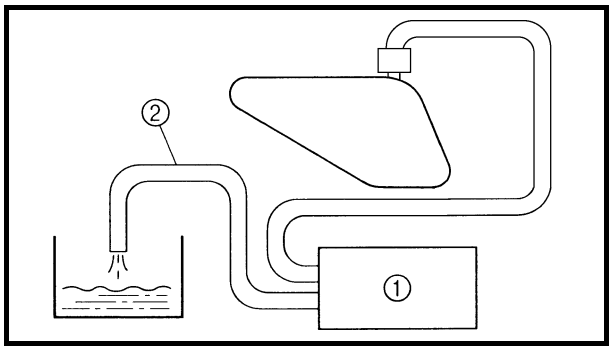
REMOVING THE FUEL SENDER

1. Remove:
   • fuel sender ①

NOTE:

Remove the fuel sender using the fuel sender removal tool ②.

	Fuel sender removal tool 90890-11098



EAS00504

CHECKING THE FUEL PUMP

1. Check:
   • fuel pump ①

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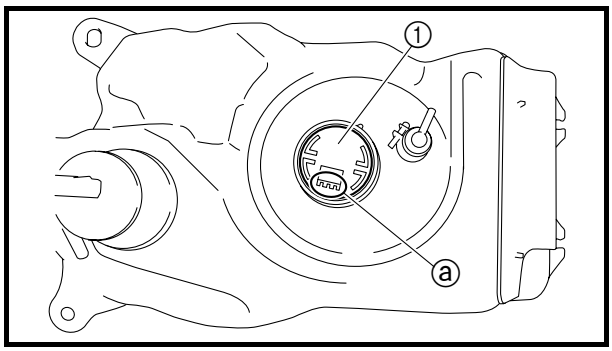
a. Disconnect the fuel hose (fuel pump to carburetor fuel hose) ② from the carburetor.
b. Place a container under the end of the fuel hose.
c. Turn the main switch to "ON" and check if fuel flows from the fuel hose ②.

Fuel flows.	**Fuel pump is OK.**
Fuel does not flow.	**Replace the fuel pump.**

d. Turn the main switch to "OFF" and check if the fuel stops flowing from the fuel hose ②.

Fuel stops flowing.	**Fuel pump is OK.**
Fuel flows.	**Replace the fuel pump.**

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INSTALLING THE FUEL SENDER

1. Install:
   - fuel sender ①

NOTE:

- Install the fuel sender using the fuel sender removal tool.
- Lubricate the gasket with lithium-soap-based grease.
- Position the fuel sender coupler ⓐ as shown in the illustration.



Fuel sender removal tool
90890-11098

CHAPTER 8
ELECTRICAL SYSTEM

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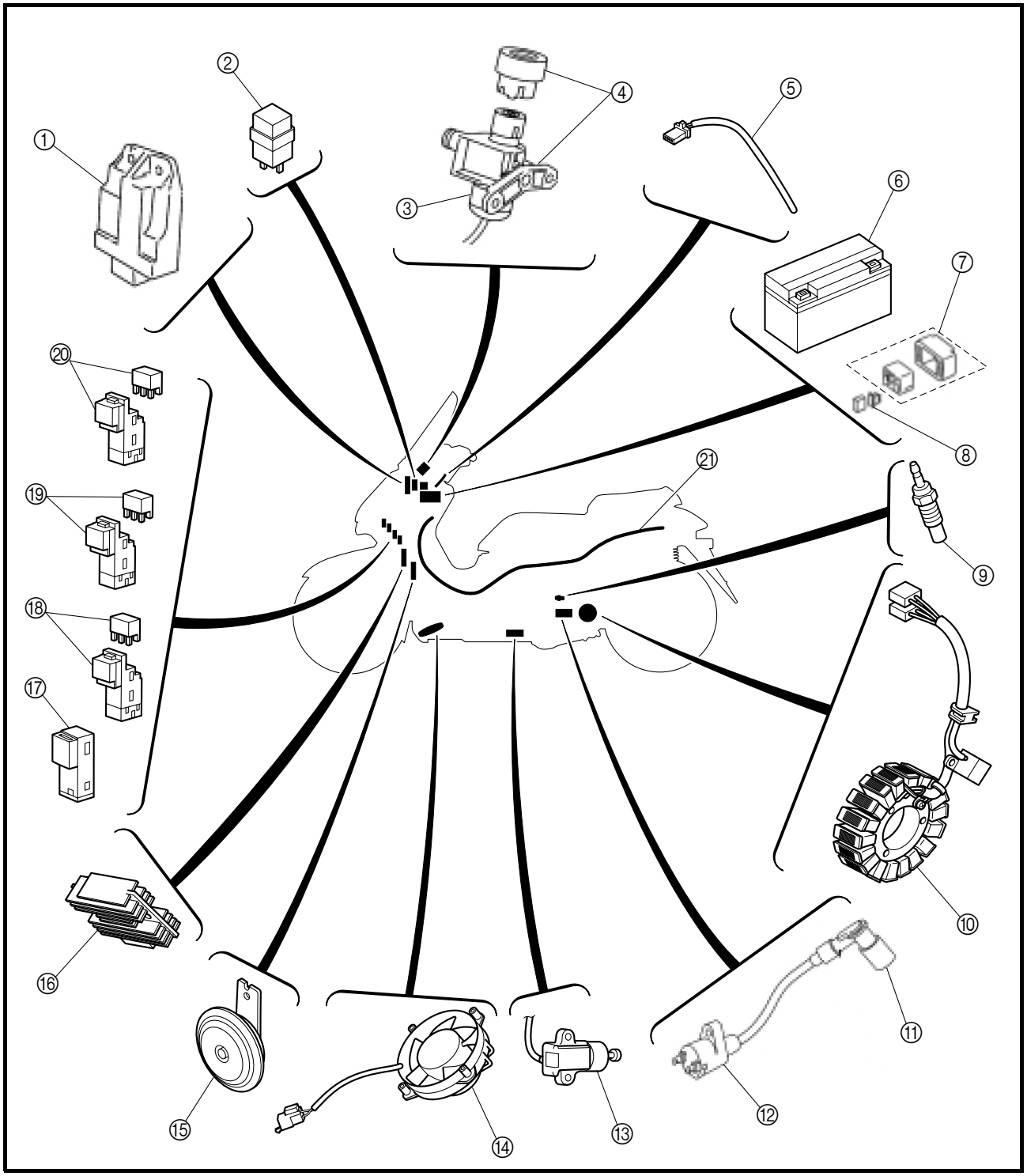
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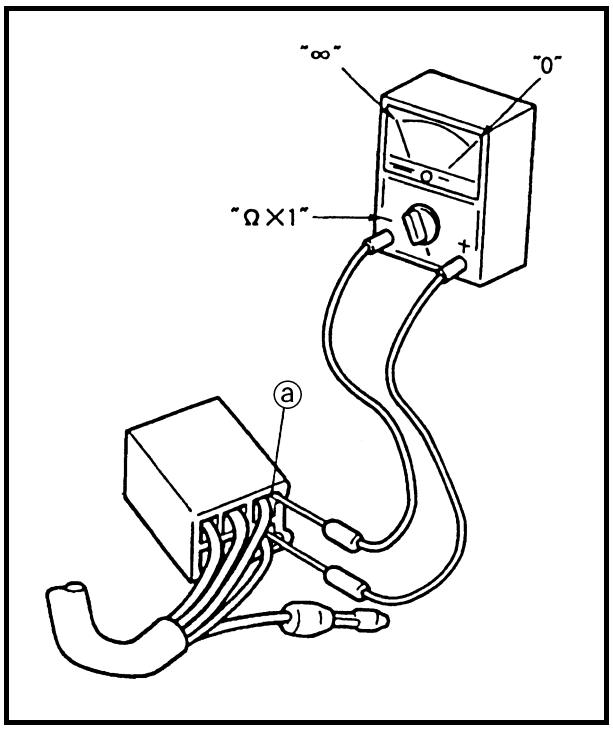
EAS07290

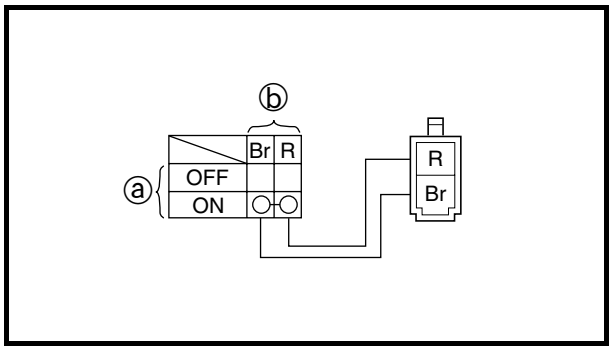
ELECTRICAL SYSTEM

ELECTRICAL COMPONENTS

① CDI unit
② Turn signal relay
③ immobilizer antenna
④ Main switch
⑤ Air temperature sensor
⑥ Battery
⑦ Starter relay
⑧ Main fuse
⑨ Coolant temperature sensor
⑩ Pickup coil/stator assembly
⑪ Spark plug cap
⑫ Ignition coil
⑬ Sidestand switch
⑭ Radiator fan motor
⑮ Horn
⑯ Rectifier/regulator
⑰ Starting circuit cut-off relay
⑱ Fuel pump relay
⑲ Radiator fan motor relay
⑳ Headlight relay
㉑ Wire harness







EAS00730

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots ⓐ. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.



Pocket tester
90890-03112

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch) are shown in an illustration similar to the one on the left.
The switch positions ⓐ are shown in the far left column and the switch lead colors ⓑ are shown in the top row in the switch illustration.

NOTE:

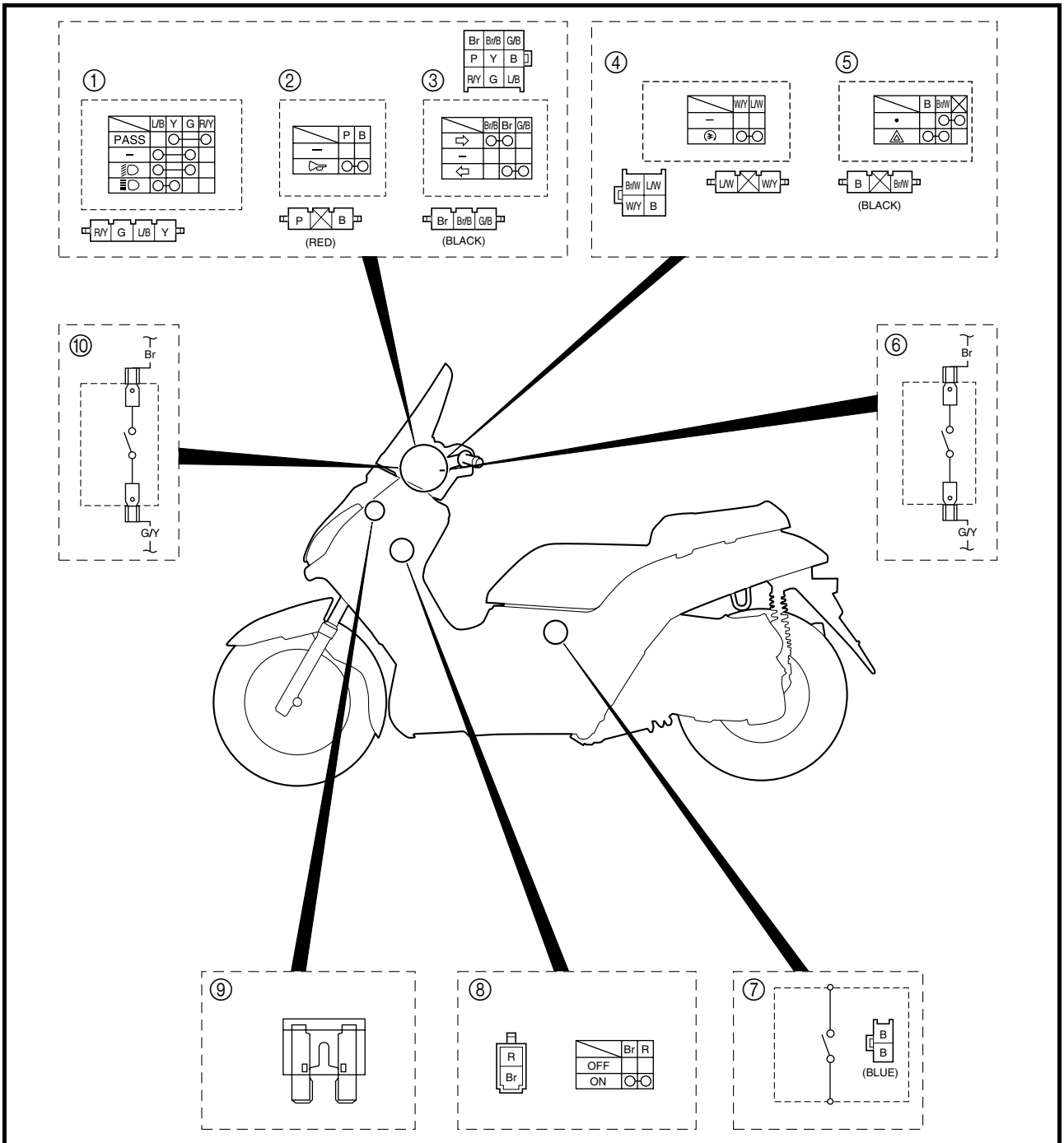
"○——○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

The example illustration on the left shows that:
There is continuity between red and brown when the switch is set to "ON".

EAS00731
CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to “CHECKING SWITCH CONTINUITY”.

Damage/wear → Repair or replace.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.



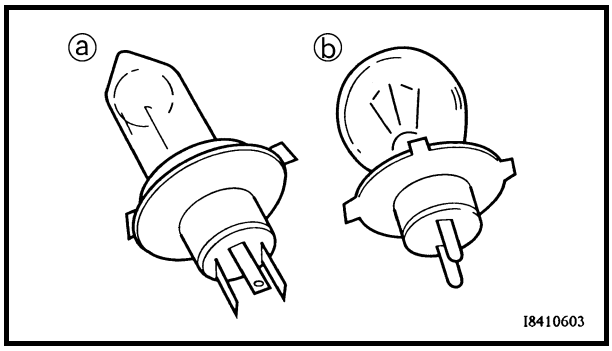
① Dimmer/pass switch
② Horn switch
③ Turn signal switch
④ Start switch
⑤ Hazard switch
⑥ Front brake light switch
⑦ Sidestand switch
⑧ Main switch
⑨ Fuse
⑩ Rear brake light switch

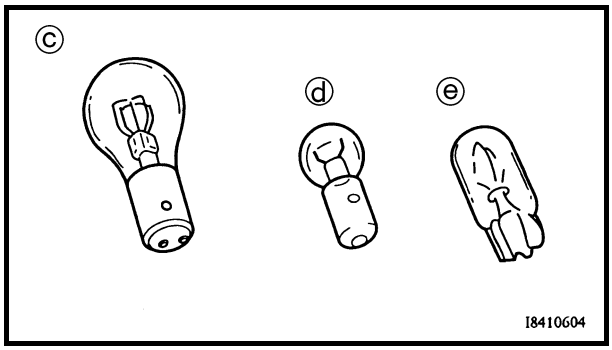
EAS00733
CHECKING THE BULBS AND BULB SOCKETS

NOTE:
Do not check any of the lights that use LEDs.

Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.

Damage/wear → Repair or replace the bulb, bulb socket or both.
Improperly connected → Properly connect.
No continuity → Repair or replace the bulb, bulb socket or both.





TYPES OF BULBS
The bulbs used on this vehicle are shown in the illustration on the left.

- Bulbs ⓐ and ⓑ are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulb ⓒ is used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs ⓓ and ⓔ are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.

CHECKING THE CONDITION OF THE BULBS

The following procedure applies to all of the bulbs.

1. Remove:
   • bulb

⚠ WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

CAUTION:

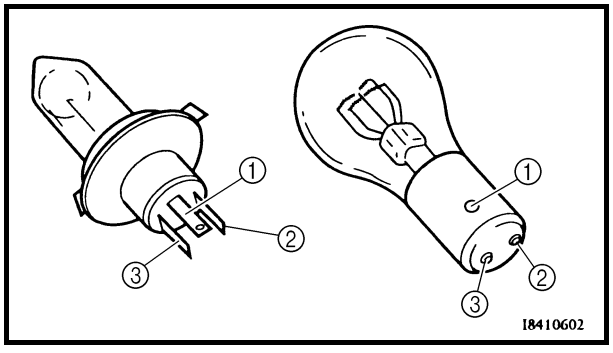
- **Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.**
- **Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.**

2. Check:
   • bulb (for continuity)
   (with the pocket tester)
   No continuity → Replace.

Pocket tester
90890-03112

NOTE:

Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.



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a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ②, and check the continuity.
b. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ③, and check the continuity.
c. If either of the readings indicate no continuity, replace the bulb.

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CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
   - bulb socket (for continuity)
     (with the pocket tester)
     No continuity → Replace.



Pocket tester
90890-03112

NOTE:

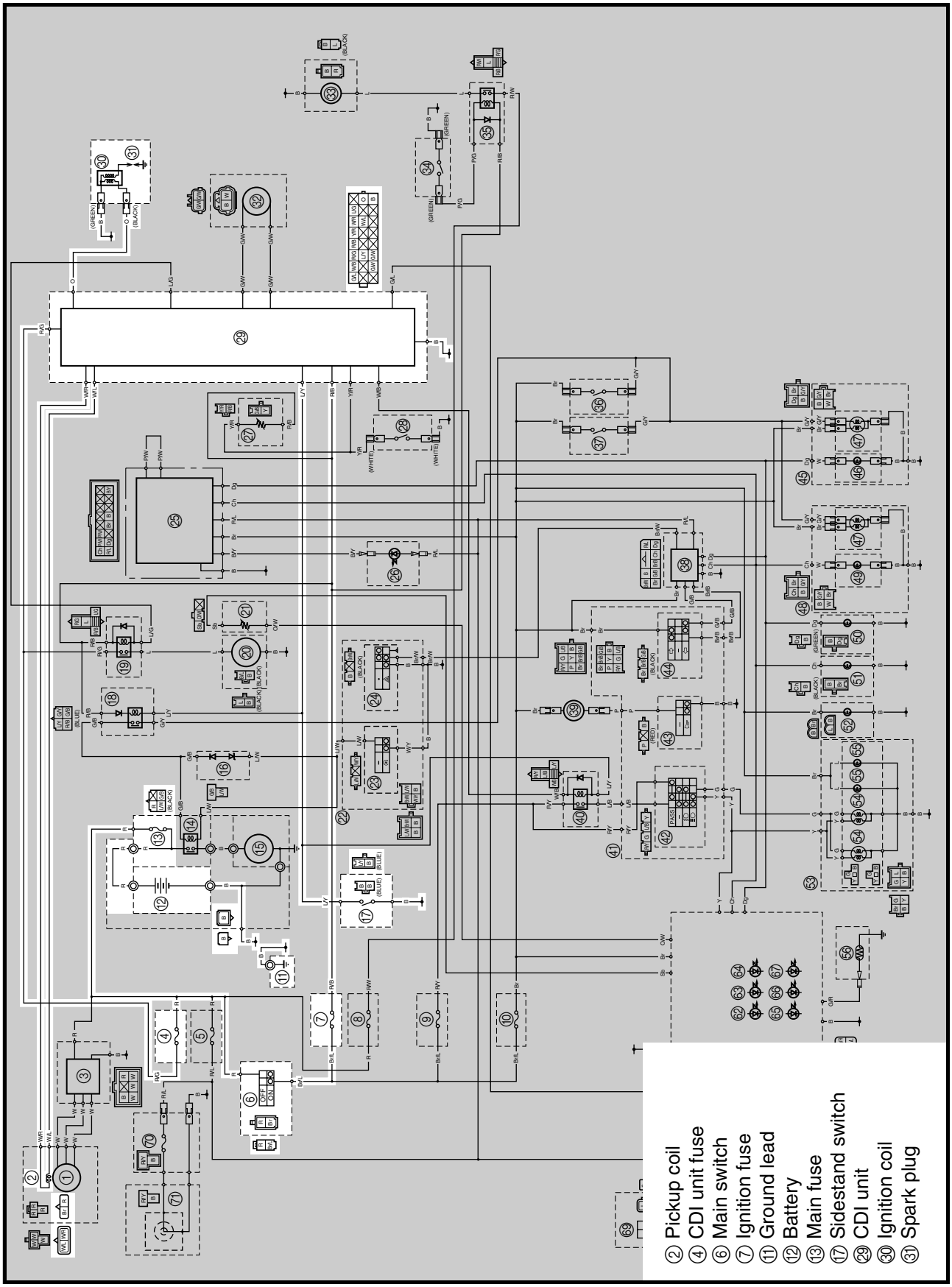
Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

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a. Install a good bulb into the bulb socket.
b. Connect the pocket tester probes to the respective leads of the bulb socket.
c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.

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EAS00734
IGNITION SYSTEM
CIRCUIT DIAGRAM



EAS00736
TROUBLESHOOTING

The ignition system fails to operate (no spark or intermittent spark).

Check:
1. main, ignition, and CDI unit fuses
2. battery
3. spark plug
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. pickup coil resistance
8. main switch
9. sidestand switch
10. wiring connections (of the entire ignition system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. footrest board

- Troubleshoot with the following special tool(s).



Ignition checker
90890-06754
Pocket tester
90890-03112

EAS00738

1. Main, ignition, and CDI unit fuses

- Check the main, ignition, and CDI unit fuses for continuity.
  Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main, ignition, and CDI unit fuses OK?

YES

NO → Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00740

3. Spark plug

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap.
  Refer to "CHECKING THE SPARK PLUG" in chapter 3.



Standard spark plug
DR8EA (NGK)
Spark plug gap
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

YES

NO → Regap or replace the spark plug.

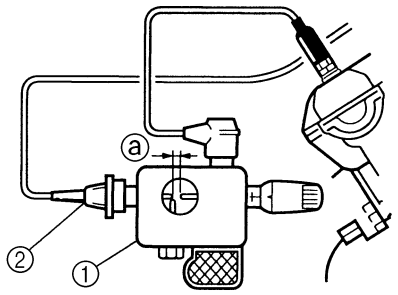
EAS00742

4. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① as shown.

② Spark plug cap

- Set the main switch to "ON".
- Measure the ignition spark gap ⓐ.
- Crank the engine by pushing the start switch and gradually increase the spark gap until a misfire occurs.



Minimum ignition spark gap
6 mm (0.24 in)

- Is there a spark and is the spark gap within specification?

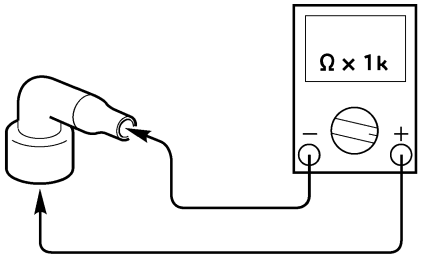
NO → The ignition system is OK.

YES

EAS00744

5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω × 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.



Spark plug cap resistance
10.0 kΩ

- Is the spark plug cap OK?

YES

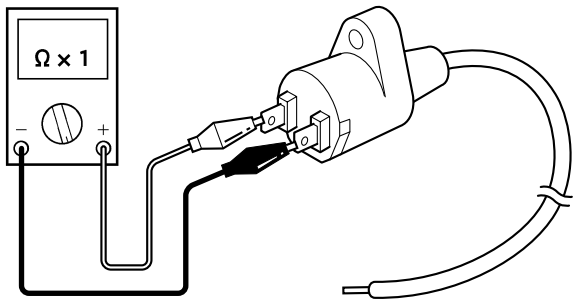
NO → Replace the spark plug cap.

EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

Positive tester probe → orange
Negative tester probe → black



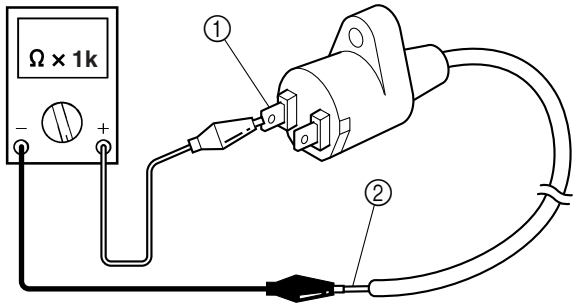
- Measure the primary coil resistance.

Primary coil resistance
0.225 ~ 0.275 Ω at 25 °C (77 °F)

- Connect the pocket tester (Ω × 1k) to the ignition coil as shown.

Positive tester probe → orange ①
Negative tester probe → spark plug lead ②

- Measure the secondary coil resistance.



Secondary coil resistance
1.89 ~ 2.31 kΩ at 25 °C (77 °F)

- Is the ignition coil OK?

YES

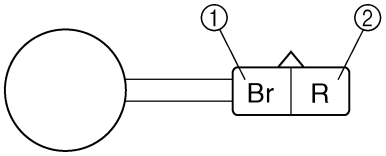
NO → Replace the ignition coil.

EAS00748

7. Pickup coil resistance

- Disconnect the pickup coil coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the pickup coil terminal as shown.

Positive tester probe → brown ①
Negative tester probe → red ②



- Measure the pickup coil resistance.

Pickup coil resistance
130 ~ 150 Ω at 20 °C (68 °F)

- Is the pickup coil OK?

YES

NO → Replace pickup coil/ stator assembly.

EAS00749

8. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO → Replace the main switch/immobilizer antenna.

EAS00752

9. Sidestand switch

- Check the sidestand switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the sidestand switch OK?

YES

NO

Replace the sidestand switch.

EAS00754

10.Wiring

- Check the entire ignition system wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the ignition system wiring properly connected and without defects?

YES

NO

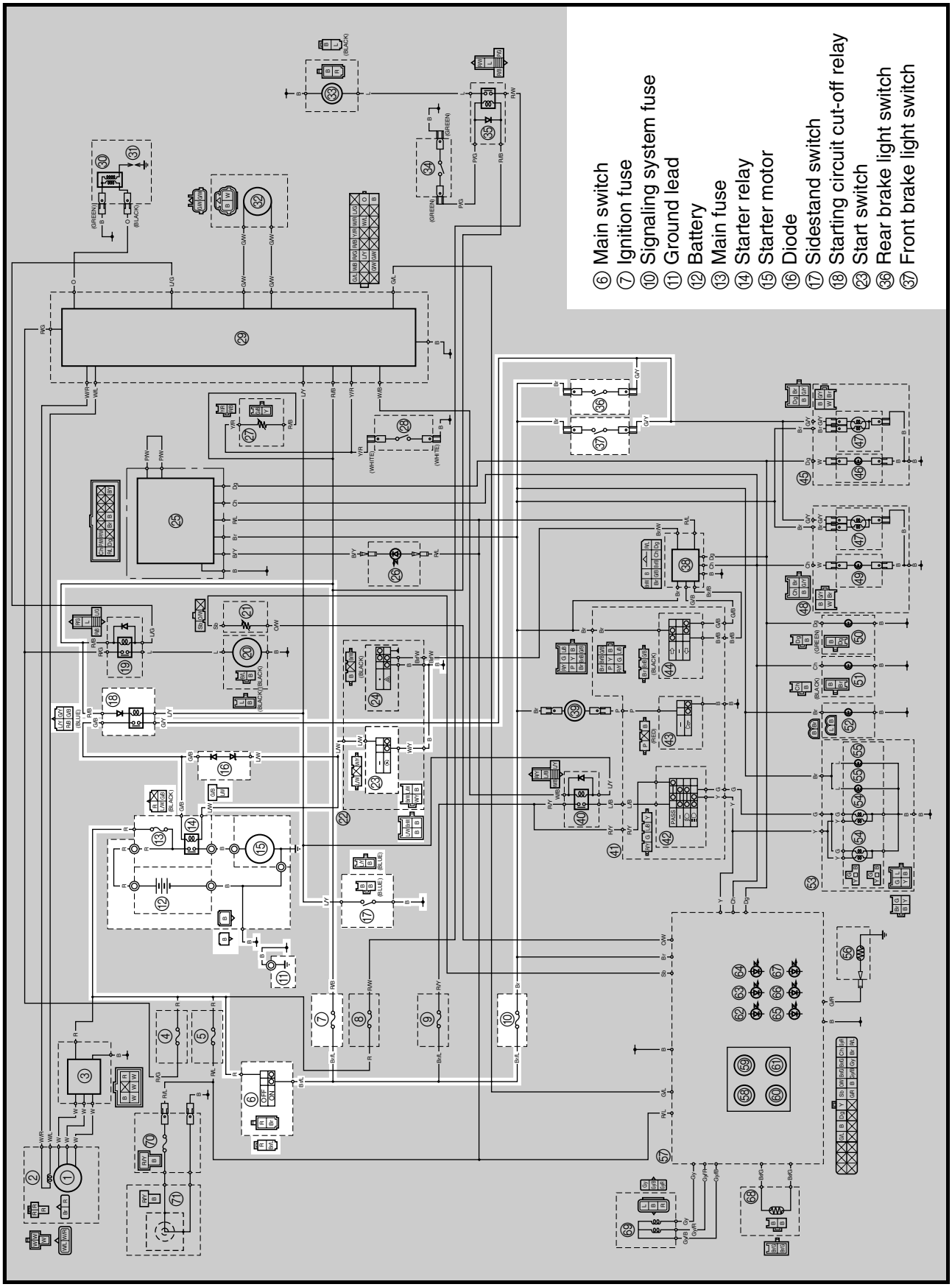
Replace the CDI unit.

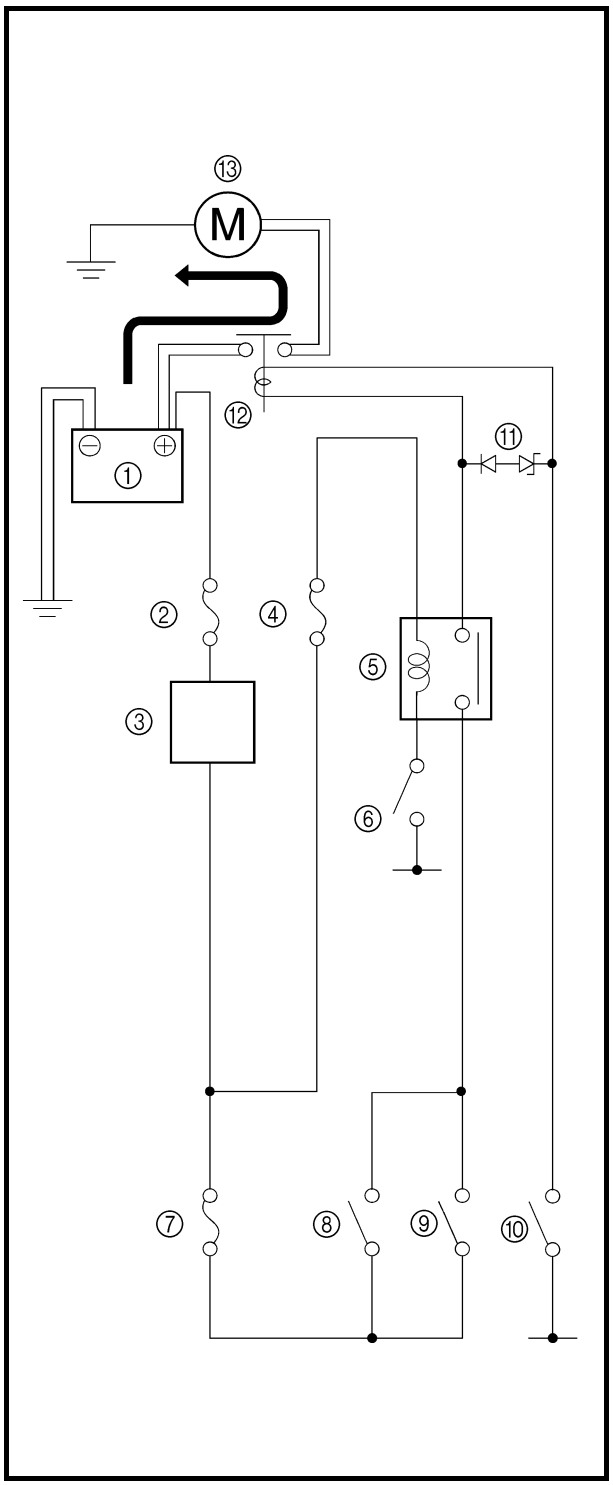
Properly connect or repair the ignition system wiring.

EAS00755

ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM





EAS00756
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the main switch is set to "ON" (switch is closed), the starter motor can only operate if the following conditions are met:

- A brake lever is pulled to the handlebar (the brake light switch is closed) and the sidestand is up (the sidestand switch is closed).

① Battery
② Main fuse
③ Main switch
④ Ignition fuse
⑤ Starting circuit cut-off relay
⑥ Sidestand switch
⑦ Signaling system fuse
⑧ Front brake light switch
⑨ Rear brake light switch
⑩ Start switch
⑪ Diode
⑫ Starter relay
⑬ Starter motor

EAS00757
TROUBLESHOOTING

The starter motor fails to turn.

Check:
1. main, ignition, and signaling system fuses
2. battery
3. starter motor
4. starting circuit cut-off relay
5. starter relay
6. main switch
7. brake light switch (front and rear)
8. sidestand switch
9. start switch
10. wiring connections
    (of the entire starting system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. handlebar upper cover (with meter assembly)

- Troubleshoot with the following special tool(s).

Pocket tester
90890-03112

EAS00738

1. Main, ignition, and signaling system fuses

- Check the main, ignition, and signaling system fuses for continuity.
  Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main, ignition, and signaling system fuses OK?

YES

NO → Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

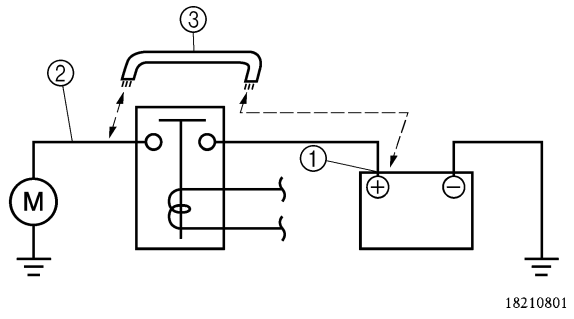
YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00758

3. Starter motor

- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.



⚠ WARNING
- **A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.**
- **This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.**

- Does the starter motor turn?

YES

NO → Repair or replace the starter motor.

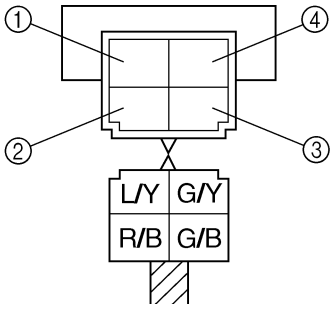
EAS00759

4. Starting circuit cut-off relay

- Remove the starting circuit cut-off relay.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the starting circuit cut-off relay terminals as shown.

Positive battery terminal → red/black ①
Negative battery terminal → blue/yellow ②

Positive tester probe → green/yellow ③
Negative tester probe → green/black ④



- Does the starting circuit cut-off relay have continuity between green/yellow and green/black?

YES → Replace the starting circuit cut-off relay.

NO

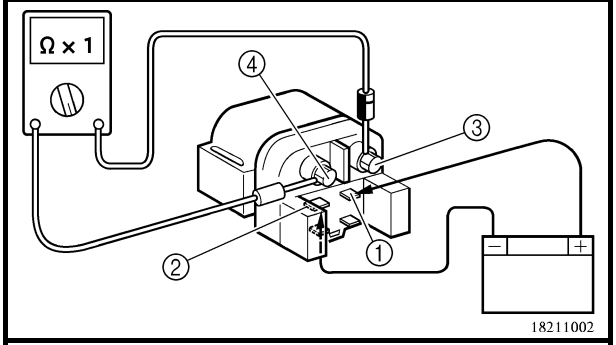
EAS00761

5. Starter relay

- Remove the starter relay.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the starter relay terminal as shown.

Positive battery terminal → green/black ①
Negative battery terminal → blue/white ②

Positive tester probe → red ③
Negative tester probe → black ④



- Does the starter relay have continuity between red and black?

YES

NO → Replace the starter relay.

EAS00749

6. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO → Replace the main switch/immobilizer antenna.

EAS00751

7. Brake light switch (front and rear)
- Check the brake light switches for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is each brake light switch OK?

YES ⇩ NO ⇩

Replace the brake light switch(es).

EAS00752

8. Sidestand switch
- Check the sidestand switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the sidestand switch OK?

YES ⇩ NO ⇩

Replace the sidestand switch.

EAS00764

9. Start switch
- Check the start switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the start switch OK?

YES ⇩ NO ⇩

Replace the start switch.

EAS00766

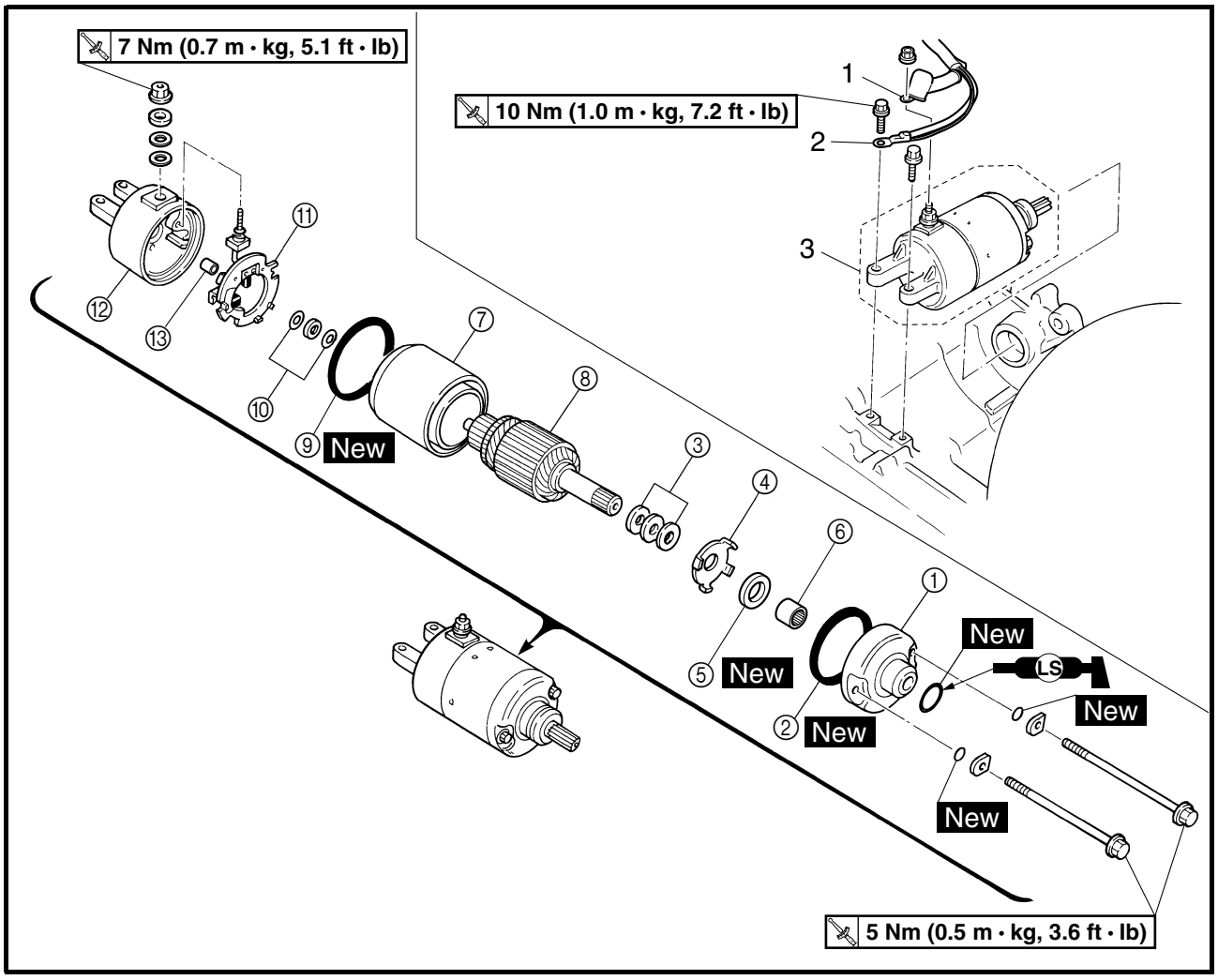
10.Wiring
- Check the entire starting system wiring.
  Refer to “CIRCUIT DIAGRAM”.
- Is the starting system wiring properly connected and without defects?

YES ⇩ NO ⇩

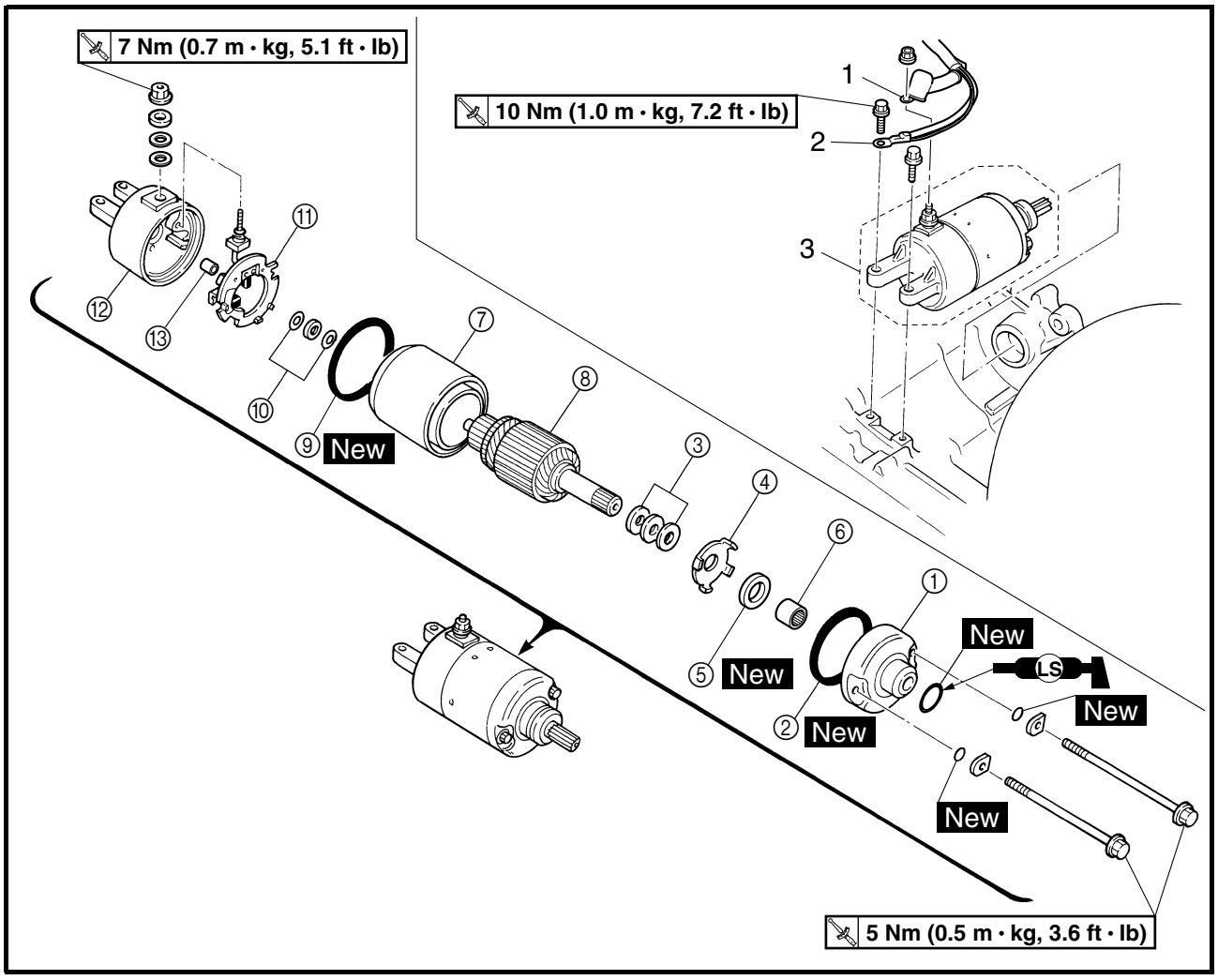
The starting system circuit is OK.

Properly connect or repair the starting system wiring.

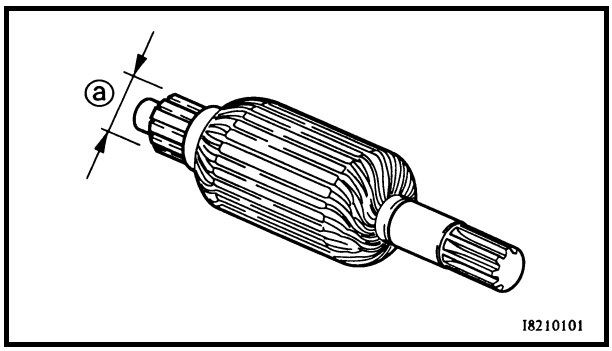
STARTER MOTOR

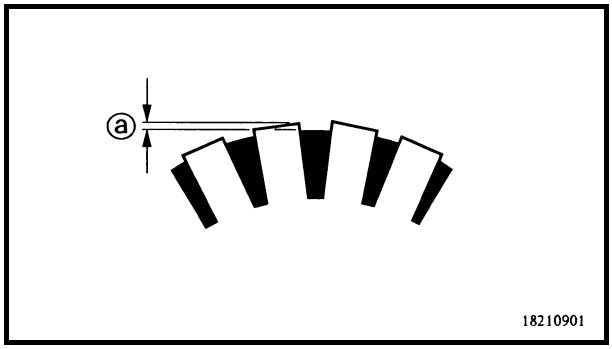


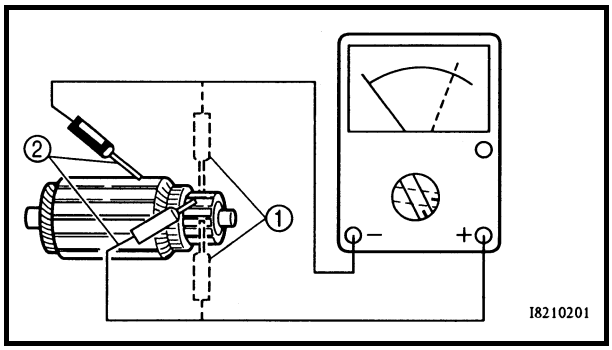
Order	Job/Part	Q'ty	Remarks
	Removing the starter motor		Remove the parts in the order listed.
	Air filter case assembly		Refer to "AIR FILTER CASE" in chapter 3.
1	Starter motor lead	1	Disconnect.
2	Ground lead	1	Disconnect.
3	Starter motor	1	For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the starter motor		Remove the parts in the order listed.
①	Starter motor front cover	1	
②	O-ring	1	
③	Shim	*	
④	Lock washer	1	
⑤	Oil seal	1	
⑥	Bearing	1	
⑦	Starter motor yoke	1	Refer to "ASSEMBLING THE STARTER MOTOR".
⑧	Armature assembly	1	
⑨	O-ring	1	
⑩	Shim	*	
⑪	Brush holder set	1	
⑫	Starter motor rear cover	1	
⑬	Bushing	1	
			For assembly, reverse the disassembly procedure.







EAS00770
CHECKING THE STARTER MOTOR

1. Check:
   • commutator
   Dirt → Clean with 600 grit sandpaper.
2. Measure:
   • commutator diameter ⓐ
   Out of specification → Replace the starter motor.

Commutator wear limit
27 mm (1.06 in)

3. Measure:
   • mica undercut ⓐ
   Out of specification → Scrape the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.

Mica undercut
0.7 mm (0.028 in)

NOTE:
The mica of the commutator must be undercut to ensure proper operation of the commutator.

4. Measure:
   • armature assembly resistances (commutator and insulation)
   Out of specification → Replace the starter motor.

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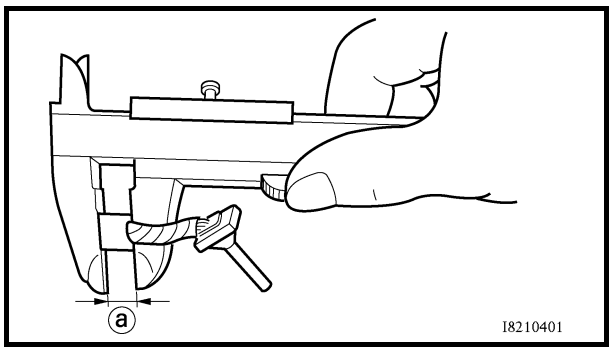
a. Measure the armature assembly resistances with the pocket tester.

Pocket tester
90890-03112

Armature coil
Commutator resistance ①
0.0012 ~ 0.0022 Ω at 20 °C (68 °F)
Insulation resistance ②
Above 1 MΩ at 20 °C (68 °F)

b. If any resistance is out of specification, replace the starter motor.

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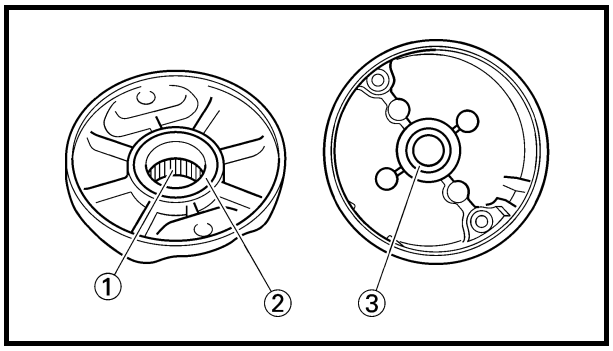
5. Measure:
   • brush length ⓐ
   Out of specification → Replace the brushes as a set.

Brush length wear limit
4.0 mm (0.16 in)

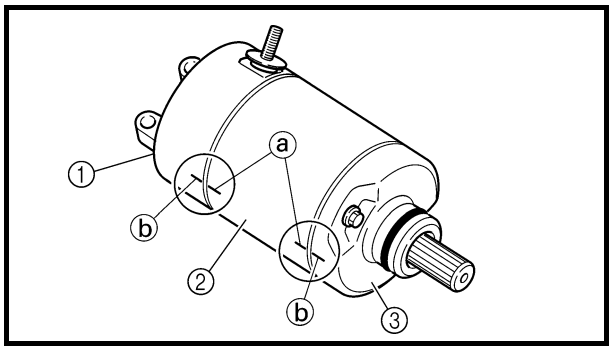
6. Measure:
   • brush spring force
   Out of specification → Replace the brush springs as a set.

Brush spring force
7.65 ~ 10.01 N
(780 ~ 1,021 gf, 27.5 ~ 36.0 oz)

7. Check:
   • gear teeth
   Damage/wear → Replace the gear.



8. Check:
   • bearing ①
   • oil seal ②
   • bushing ③
   Damage/wear → Replace the defective part(s).



EAS00772
ASSEMBLING THE STARTER MOTOR

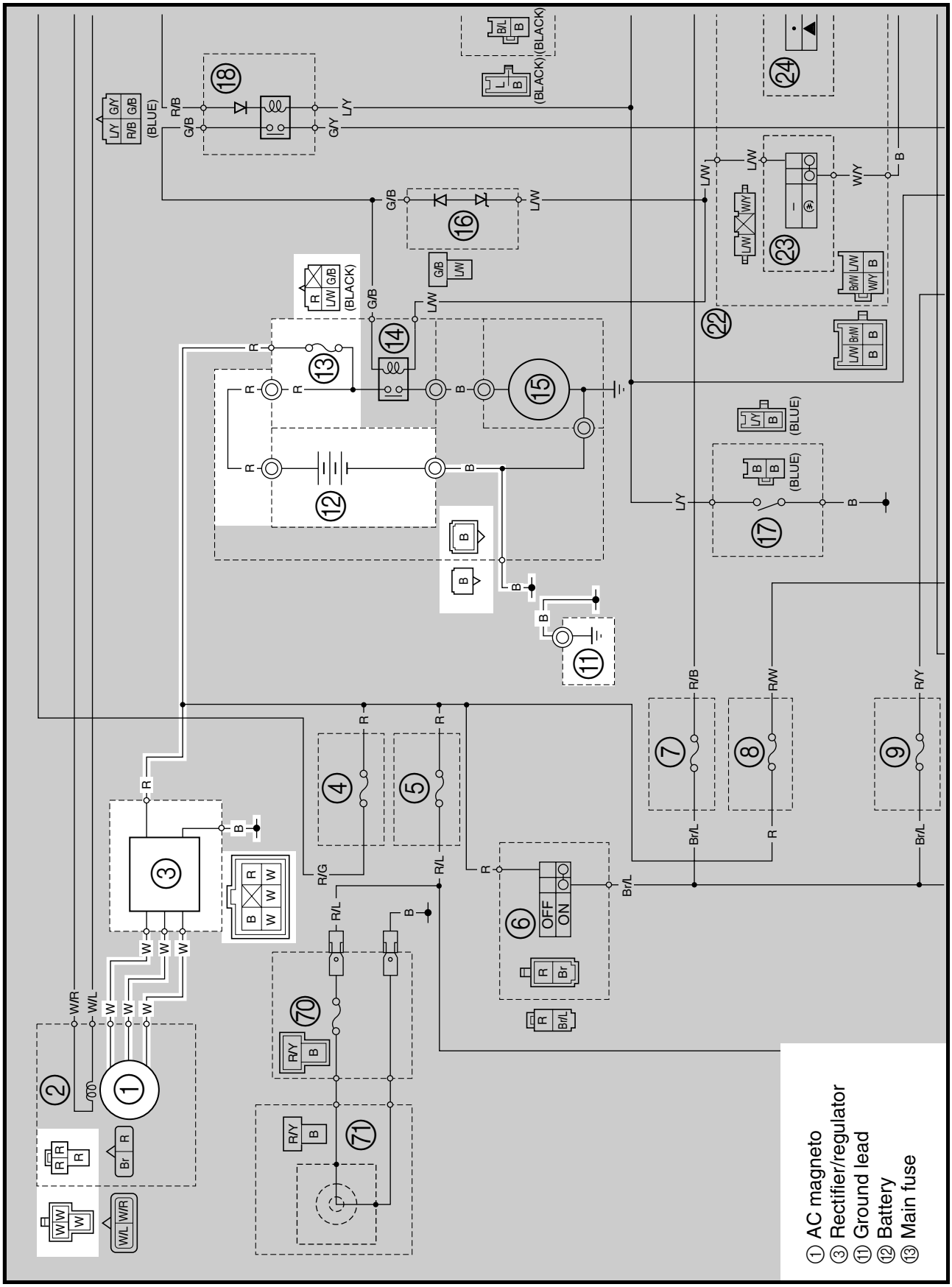
1. Install:
   • starter motor rear cover ①
   • armature assembly
   • starter motor yoke ②
   • starter motor front cover ③

NOTE:
- To prevent damaging the brushes during installation, push down on the brush springs.
- Align the alignment marks ⓐ on the starter motor yoke with the alignment marks ⓑ on the starter motor front and rear covers.

EAS00773

CHARGING SYSTEM

CIRCUIT DIAGRAM



EAS00774
TROUBLESHOOTING

The battery is not being charged.

Check:
1. main fuse
2. battery
3. charging voltage
4. stator coil resistance
5. wiring connections
   (of the entire charging system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. upper panel
2. storage box
3. battery cover

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main fuse

- Check the main fuse for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Is the main fuse OK?

YES

NO

Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES

NO

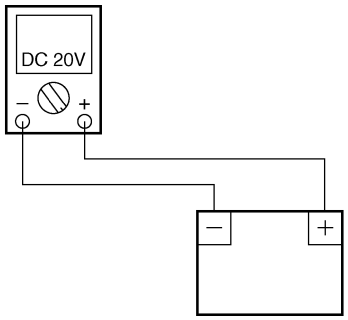
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00775

3. Charging voltage

- Connect the pocket tester (DC 20 V) to the battery as shown.

Positive tester probe →
positive battery terminal
Negative tester probe →
negative battery terminal



- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.

Charging voltage
14 V at 5,000 r/min

NOTE:
Make sure the battery is fully charged.

- Is the charging voltage within specification?

NO → The charging circuit is OK.

YES → Replace the pickup coil/stator assembly.

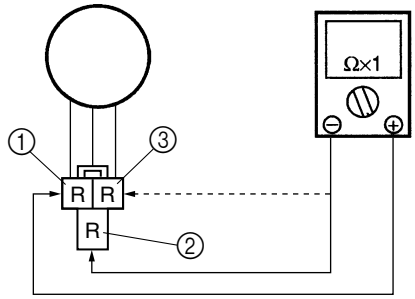
EAS00776

4. Stator coil resistance

- Disconnect the stator coil coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the stator coil as shown.

Positive tester probe → red ①
Negative tester probe → red ②

Positive tester probe → red ①
Negative tester probe → red ③



- Measure the stator coil resistances.

Stator coil resistance
0.385 ~ 0.415 Ω at 20 °C (68 °F)

- Is the stator coil OK?

YES → NO → Replace the pickup coil/stator assembly.

EAS00779

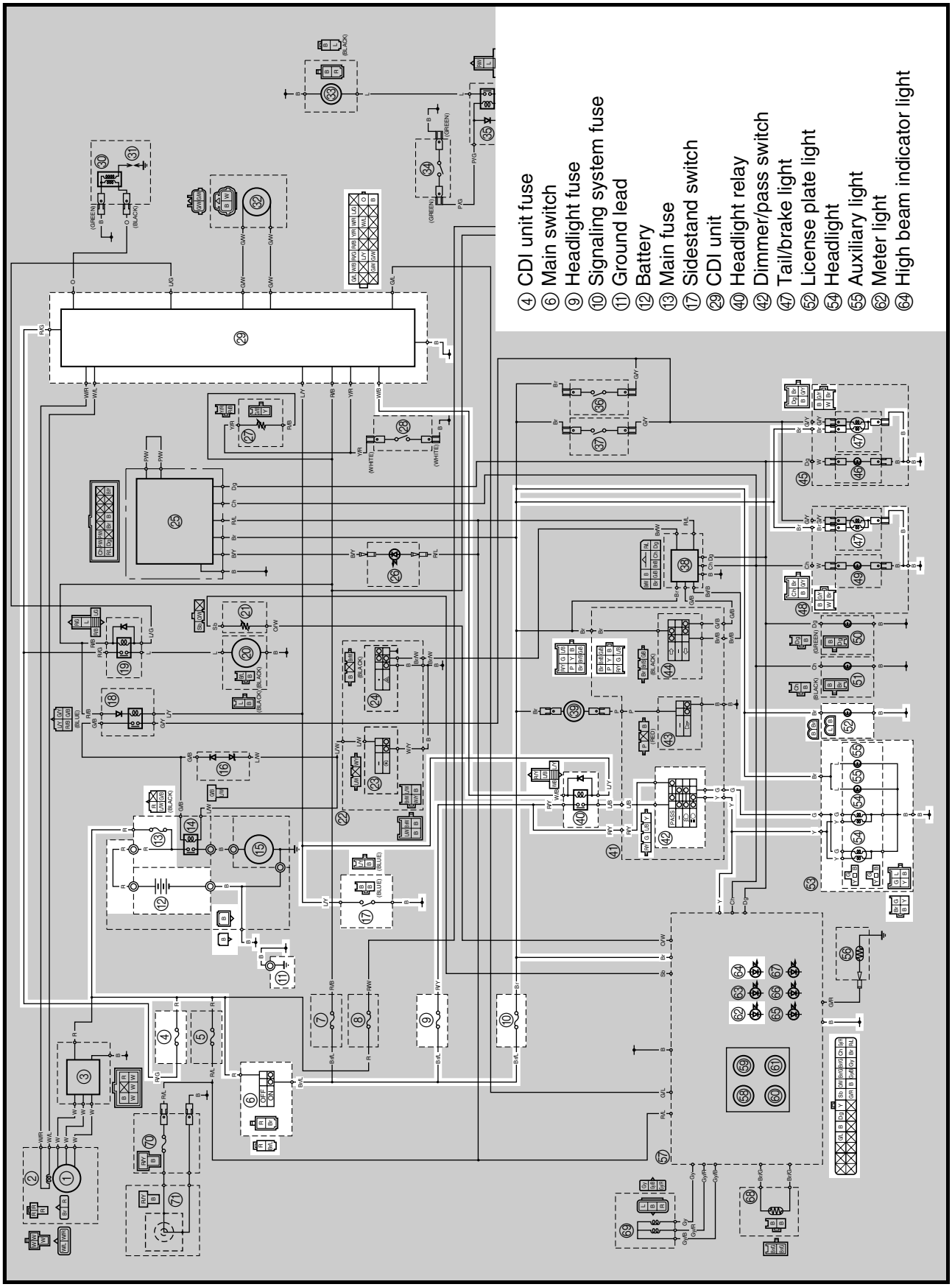
5. Wiring

- Check the entire charging system wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the charging system wiring properly connected and without defects?

YES → Replace the rectifier/regulator.

NO → Properly connect or repair the charging system wiring.

EAS00780
LIGHTING SYSTEM
CIRCUIT DIAGRAM



EAS00781
TROUBLESHOOTING

Any of the following fail to light: headlights, high beam indicator light, taillight, license plate light, auxiliary lights or meter light.

Check:
1. main, headlight, signaling system, and CDI unit fuses
2. battery
3. main switch
4. dimmer/pass switch
5. sidestand switch
6. headlight relay
7. wiring connections (of the entire lighting system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. handlebar upper cover (with meter assembly)

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main, headlight, signaling system, and CDI unit fuses

- Check the main, headlight, signal system, and CDI unit fuses for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Are the main, headlight, signal system, and CDI unit fuses OK?

YES → NO

Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES → NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES → NO

Replace the main switch/immobilizer antenna.

EAS00784

4. Dimmer/pass switch

- Check the dimmer/pass switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the dimmer/pass switch OK?

YES → NO

Replace the dimmer/pass switch.

EAS00752

5. Sidestand switch

- Check the sidestand switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the sidestand switch OK?

YES

NO

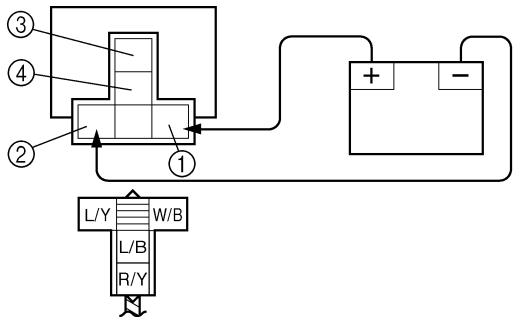
Replace the sidestand switch.

6. Headlight relay

- Remove the headlight relay.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the headlight relay terminals as shown.
- Check the headlight relay for continuity.

Positive battery terminal → **white/black** ①
Negative battery terminal → **blue/yellow** ②

Positive tester probe → **red/yellow** ③
Negative tester probe → **blue/black** ④



- Does the headlight relay have continuity between red/yellow and blue/black?

YES

NO

Replace the headlight relay.

EAS00787

7. Wiring

- Check the entire lighting system wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the lighting system wiring properly connected and without defects?

YES

NO

Check the condition of each of the lighting system circuits. Refer to “CHECKING THE LIGHTING SYSTEM”.

Properly connect or repair the lighting system wiring.

EAS00788
CHECKING THE LIGHTING SYSTEM

1. The headlights and the high beam indicator light fail to come on.

1. Headlight bulb and socket

- Check the headlight bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the headlight bulb and socket OK?

YES

NO

Replace the headlight bulb, socket or both.

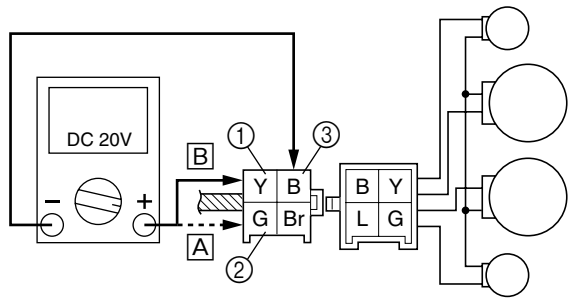
2. Voltage

- Connect the pocket tester (DC 20 V) to the headlight (wire harness side) and meter assembly couplers as shown.

A When the dimmer/pass switch is set to "≣D"
B When the dimmer/pass switch is set to "≣D"

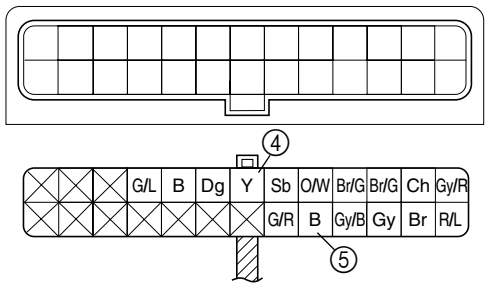
Headlight
Positive tester probe →
yellow ① or green ②
Negative tester probe → black ③

Headlight coupler



High beam indicator light
Positive tester probe → yellow ④
Negative tester probe → black ⑤

Meter assembly coupler



- Set the main switch to "ON".
- Start the engine.
- Set the dimmer/pass switch to "≣D" or "≣D".
- Measure the voltage (DC 12 V) of yellow ① (green ②) on the headlight coupler (wire harness side) and yellow ④ on the meter assembly coupler.
- Is the voltage within specification?

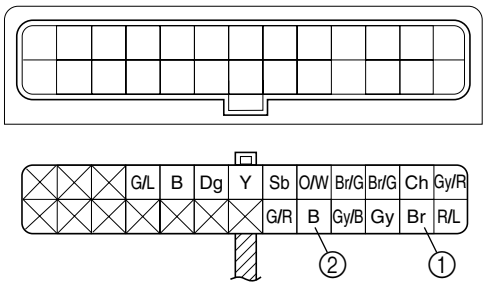
YES

NO

Replace the CDI unit or meter assembly.

The wiring circuit from the main switch to the headlight coupler or meter assembly coupler is faulty and must be repaired.

EAS00789
2. The meter light fails to come on.

1. Voltage
• Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.
Positive tester probe → brown ① **Negative tester probe → black ②**

• Set the main switch to “ON”. • Measure the voltage (DC 12 V) of brown ① on the meter assembly coupler. • Is the voltage within specification?

YES → Replace the meter assembly.

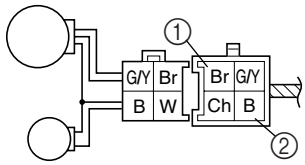
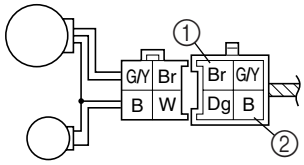
NO → The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

EAS00790
3. The tail/brake light fails to come on.

1. Tail/brake light bulbs and sockets (right and left)
• Check the tail/brake light bulbs and sockets for continuity. Refer to “CHECKING THE BULBS AND BULB SOCKETS”. • Are the tail/brake light bulbs and sockets OK?

YES →

NO → Replace the tail/brake light bulb, socket or both.

2. Voltage
• Connect the pocket tester (DC 20 V) to the tail/brake light assembly coupler (wire harness side) as shown.
Ⓐ Tail/brake light (left) Ⓑ Tail/brake light (right)
Positive tester probe → brown ① **Negative tester probe → black ②**
Ⓐ 
Ⓑ 
• Set the main switch to “ON”. • Measure the voltage (DC 12 V) of brown ① on the tail/brake light assembly coupler (wire harness side). • Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the tail/brake light assembly coupler is faulty and must be repaired.

EAS00791
4. The auxiliary lights fail to come on.

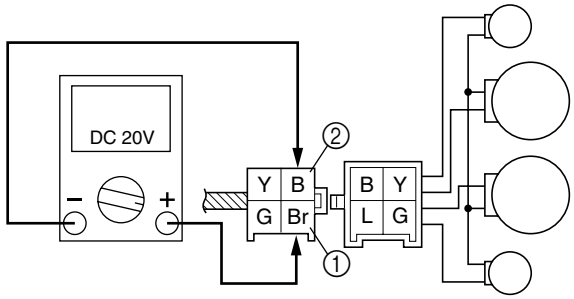
1. Auxiliary light bulb and socket
- Check the auxiliary light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the auxiliary light bulb and socket OK?

YES → 2. Voltage

NO → Replace the auxiliary light bulb, socket or both.

2. Voltage
- Connect the pocket tester (DC 20 V) to the headlight assembly coupler (wire harness side) as shown.

Positive tester probe → brown ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① on the headlight assembly coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the headlight assembly coupler is faulty and must be repaired.

EAS00792
5. The license plate light fails to come on.

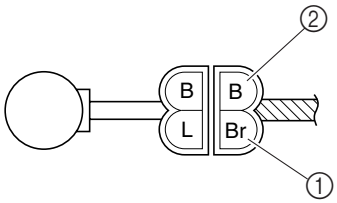
1. License plate light bulb and socket
- Check the license plate light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the license plate light bulb and socket OK?

YES → 2. Voltage

NO → Replace the license plate light bulb, socket or both.

2. Voltage
- Connect the pocket tester (DC 20 V) to the license plate coupler (wire harness side) as shown.

Positive tester probe → brown ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① on the license plate coupler (wire harness side).
- Is the voltage within specification?

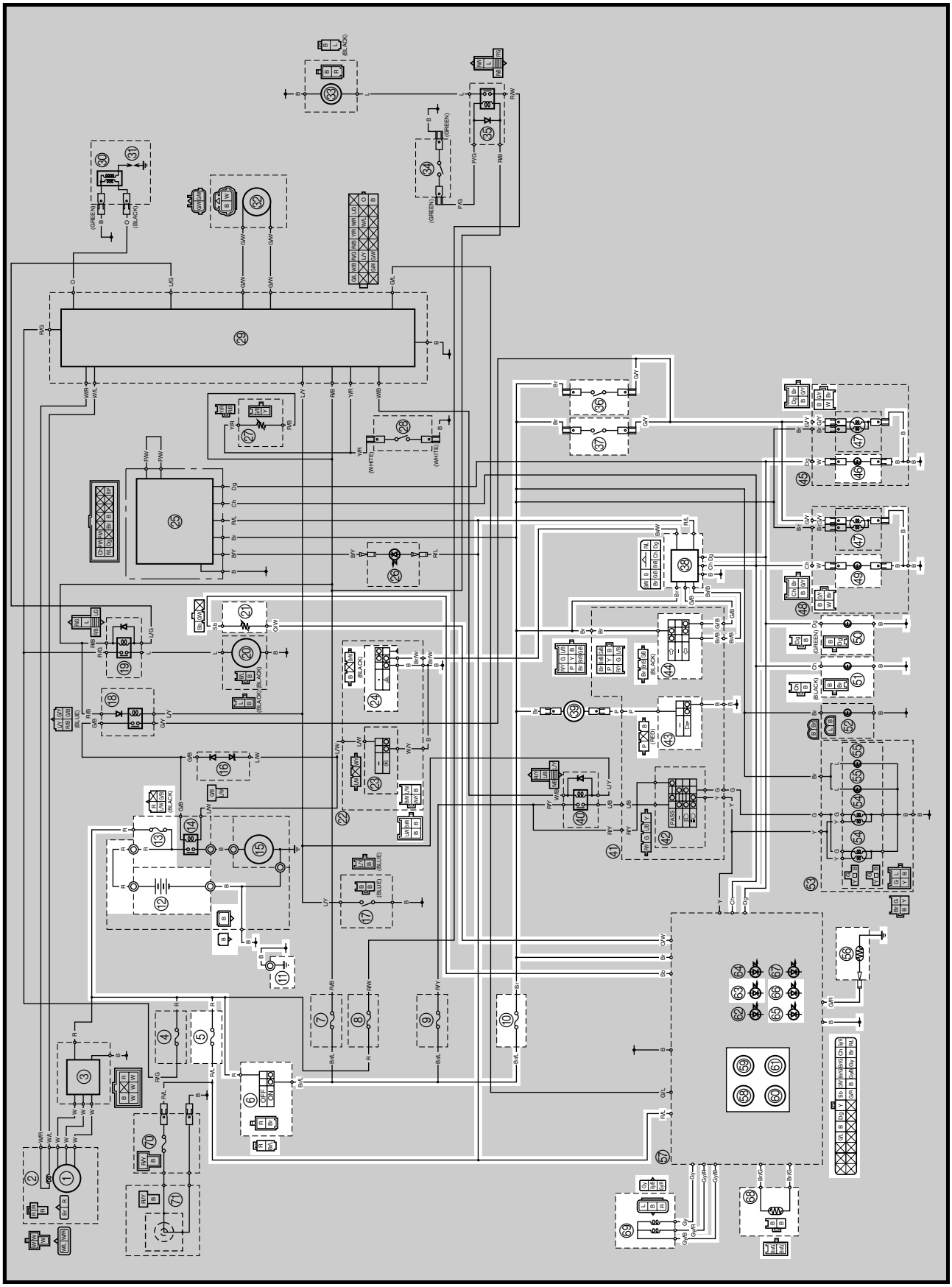
YES → This circuit is OK.

NO → The wiring circuit from the main switch to the license plate coupler is faulty and must be repaired.

EAS00793

SIGNALING SYSTEM

CIRCUIT DIAGRAM



⑤ Backup fuse (meter assembly)
⑥ Main switch
⑩ Signaling system fuse
⑪ Ground lead
⑫ Battery
⑬ Main fuse
㉑ Fuel sender
㉔ Hazard switch
㊱ Rear brake light switch
㊲ Front brake light switch
㊳ Turn signal/hazard relay
㊴ Horn
㊸ Horn switch
㊹ Turn signal switch
㊻ Rear turn signal light (right)
㊼ Tail/brake light
㊾ Rear turn signal light (left)
㊿ Front turn signal light (right)
(51) Front turn signal light (left)
(56) Coolant temperature sensor
(58) Coolant temperature gauge
(59) Fuel level gauge
(60) Speedometer
(61) Multifunction meter
(63) Fuel level warning light
(65) Left turn signal indicator light
(66) Right turn signal indicator light
(68) Air temperature sensor
(69) Speed sensor

EAS00794
TROUBLESHOOTING

- **Any of the following fail to light: turn signal light, brake light or an indicator light.**
- **The horn fails to sound.**
- **The fuel level gauge fails to operate.**
- **The speedometer fails operate.**
- **The ambient temperature display fails to operate.**
- **The coolant temperature gauge (meter assembly) fails to indicate.**

Check:
1. main, signaling system, and backup fuses
2. battery
3. main switch
4. wiring connections
   (of the entire signaling system)

NOTE:
- Before troubleshooting, remove the following part(s):
1. storage box
2. front cowling
3. storage compartment
4. handlebar upper cover (with meter assembly)
- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main, signaling system, and backup fuses

- Check the main, signaling system, and backup fuses for continuity.
  Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main, signaling system, and backup fuses OK?

YES ↓

NO →

Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES ↓

NO →

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES ↓

NO →

Replace the main switch/immobilizer antenna.

EAS00795

4. Wiring

- Check the entire signaling system wiring.
  Refer to "CIRCUIT DIAGRAM".
- Is the signaling system wiring properly connected and without defects?

YES ↓

NO →

Check the condition of each of the signaling system circuits.
Refer to "CHECKING THE SIGNALING SYSTEM".

Properly connect or repair the signaling system wiring.

EAS00796
CHECKING THE SIGNALING SYSTEM

1. The horn fails to sound.

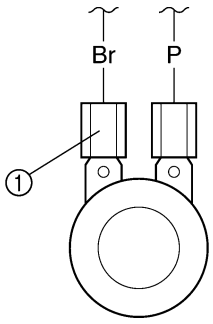
1. Horn switch
- Check the horn switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the horn switch OK?

YES ⇩ NO ⇩

Replace the horn switch.

2. Voltage
- Connect the pocket tester (DC 20 V) to the horn connector at the horn terminal as shown.

Tester positive probe → brown ①
Tester negative probe → ground

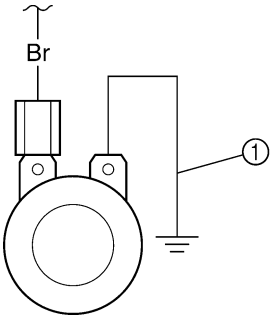


- Set the main switch to “ON”.
- Measure the voltage (12 V) of brown at the horn terminal.
- Is the voltage within specification?

YES ⇩ NO ⇩

The wiring circuit from the main switch to the horn connector is faulty and must be repaired.

3. Horn
- Disconnect the pink connector at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Set the main switch to “ON”.
- Does the horn sound?



YES ⇩ NO ⇩

Repair or replace the pink lead or ground lead.

Replace the horn.

EAS00797
2. The tail/brake light fails to come on.

1. Tail/brake light bulbs and sockets
- Check the tail/brake light bulbs and sockets for continuity.
- Are the tail/brake light bulbs and sockets OK?

YES → NO

Replace the tail/brake light bulb, socket or both.

2. Brake light switches
- Check the brake light switches for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the brake light switch OK?

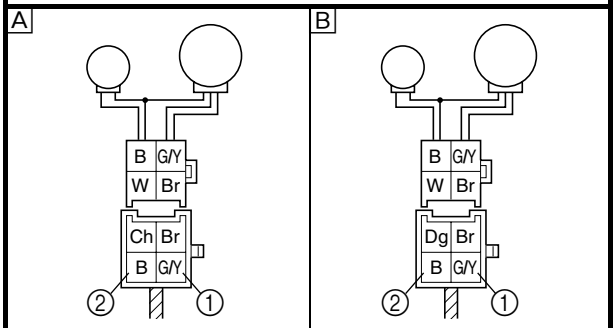
YES → NO

Replace the brake light switch(es).

3. Voltage
- Connect the pocket tester (DC 20 V) to the tail/brake light assembly coupler (wire harness side) as shown.

A Tail/brake light (left)
B Tail/brake light (right)

Positive tester probe → green/yellow ①
Negative tester probe → black ②



- Set the main switch to “ON”.
- Pull in the brake levers.
- Measure the voltage (DC 12 V) of green/yellow ① on the tail/brake light assembly coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the tail/brake light assembly coupler is faulty and must be repaired.

EAS00799

3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal light bulbs and sockets

- Check the turn signal light bulbs and sockets for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the turn signal light bulbs and sockets OK?

YES ⇩ NO ⇩

Replace the turn signal light bulb, socket or both.

2. Turn signal switch

- Check the turn signal switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the turn signal switch OK?

YES ⇩ NO ⇩

Replace the turn signal switch.

3. Hazard switch

- Check the hazard switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the hazard switch OK?

YES ⇩ NO ⇩

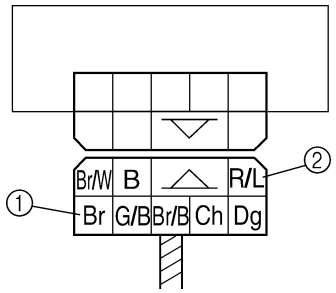
Replace the hazard switch.

4. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal/hazard relay coupler as shown.

Turn signal function
Positive tester probe → brown ①
Negative tester probe → ground

Hazard function
Positive tester probe → red/blue ②
Negative tester probe → ground



Turn signal function
- Set the main switch to "ON".
- Measure the voltage (DC 12 V) on brown ① at the turn signal/hazard relay coupler.

Hazard function
- Set the main switch to "ON".
- Measure the voltage (DC 12 V) on red/blue ② at the turn signal/hazard relay coupler.
- Is the voltage within specification?

YES ⇩ NO ⇩

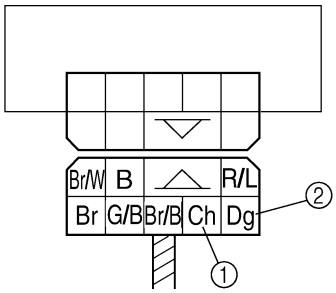
The wiring circuit from the main switch to the turn signal/hazard relay coupler is faulty and must be repaired for the turn signal function.
The wiring circuit from the battery to the turn signal/hazard relay coupler is faulty and must be repaired for the hazard function.

5. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal/hazard relay coupler as shown.

Turn signal function
Left turn signal light
Positive tester probe → chocolate ①
Negative tester probe → ground
Right turn signal light
Positive tester probe → dark green ②
Negative tester probe → ground

Hazard function
Positive tester probe → chocolate ①
Positive tester probe → dark green ②
Negative tester probe → ground



Turn signal function
- Set the main switch to "ON".
- Set the turn signal switch to "⇦".
- Measure the voltage (DC 12 V) on chocolate ① at the turn signal/hazard relay coupler.
- Set the turn signal switch to "⇨".
- Measure the voltage (DC 12 V) on dark green ② at the turn signal/hazard relay coupler.

Hazard function
- Set the main switch to "ON".
- Set the hazard switch to "⚠".
- Measure the voltage (DC 12 V) on chocolate ① at the turn signal/hazard relay coupler.
- Measure the voltage (DC 12 V) on dark green ② at the turn signal/hazard relay coupler.
- Is the voltage within specification?

YES

NO

The turn signal/hazard relay is faulty and must be replaced.

6. Voltage

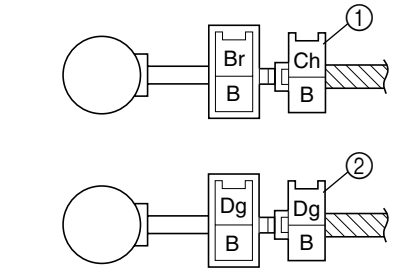
- Connect the pocket tester (DC 20 V) to the turn signal light assembly coupler or meter assembly coupler as shown.

A Front turn signal light (left and right)
B Tail/brake light (left and right)
C Meter assembly

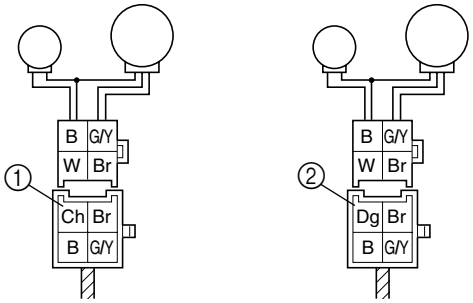
Left turn signal light
Positive tester probe → chocolate ①
Negative tester probe → ground

Right turn signal light
Positive tester probe → dark green ②
Negative tester probe → ground

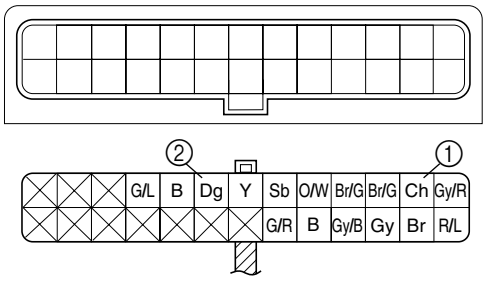
A



B



C



- Set the main switch to "ON".
- Set the turn signal switch to "⇦" or "⇨".
- Measure the voltage (DC 12 V) of the chocolate ① or dark green ② at the turn signal light assembly coupler (wire harness side) or meter assembly coupler.
- Is the voltage within specification?

YES → Replace the meter assembly.

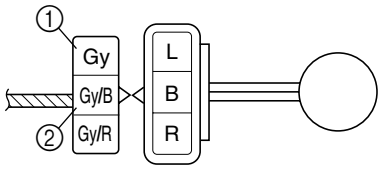
NO → The wiring circuit from the turn signal switch to the turn signal light coupler or meter assembly coupler is faulty and must be repaired.

EAS00806
4. The speedometer fails to operate.

1. Speed sensor

- Connect the pocket tester (DC 20 V) to the speed sensor coupler (wire harness side) as shown.

Positive tester probe → gray ①
Negative tester probe → gray/black ②



- Set the main switch to "ON".
- Elevate the front wheel and slowly rotate it.
- Measure the voltage (DC 5 V) of gray and gray/black. With each full rotation of the front wheel, the voltage reading should cycle from 0.6 V to 4.8 V to 0.6 V to 4.8 V.
- Does the voltage reading cycle correctly?

YES

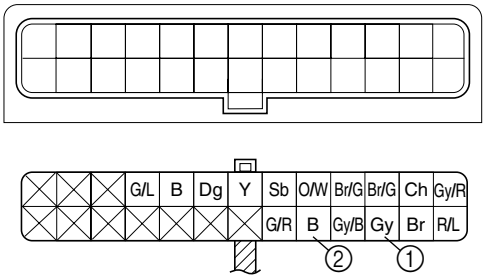
NO

Replace the speed sensor.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.

Positive tester probe → gray ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 5 V) of gray ① on the meter assembly coupler.
- Is the voltage within specification?

YES

This circuit is OK.

NO

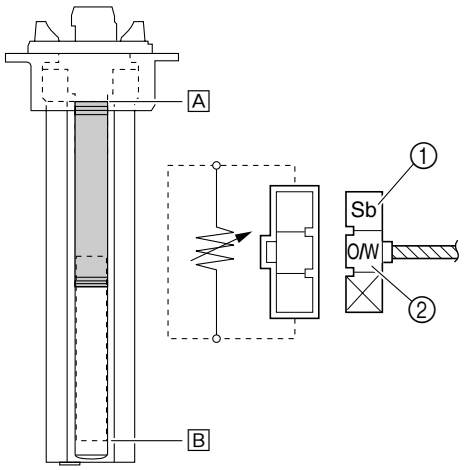
Replace the meter assembly.

EAS00804
5. The fuel level gauge fails to operate.

1. Fuel sender

- Remove the fuel sender from the fuel tank.
- Connect the pocket tester to the fuel sender coupler as shown.

Positive tester probe → sky blue ①
Negative tester probe → orange/white ②



- Measure the fuel sender resistances.

Fuel sender resistance
Full position of the float A
(Ω × 1)
0 ~ 7 Ω
Empty position of the float B
(Ω × 10)
87 ~ 103 Ω

- Is the fuel sender OK?

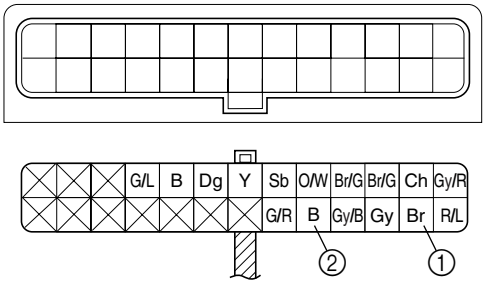
YES → NO

Replace the fuel sender.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.

Positive tester probe → brown ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① and black ② at the meter assembly coupler.
- Is the voltage within specification?

YES → Replace the meter assembly.

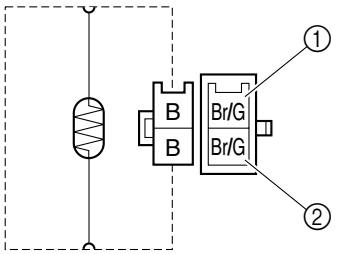
NO → The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

EAS00804
6. The ambient temperature display fails to operate.

1. Air temperature sensor

- Connect the pocket tester (Ω × 1k) to the air temperature sensor coupler as shown.

Positive tester probe → brown/green ①
Negative tester probe → brown/green ②



- Measure the air temperature sensor resistances.

Air temperature sensor resistance
12.09 kΩ at 20 °C (68 °F)
8.31 kΩ at 30 °C (86 °F)

- Is the air temperature sensor OK?

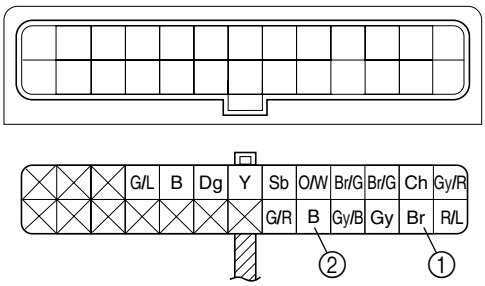
YES

NO → Replace the air temperature sensor.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.

Positive tester probe → brown ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① and black ② at the meter assembly coupler.
- Is the voltage within specification?

YES → Replace the meter assembly.

NO → The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

7. Coolant temperature gauge fails to operate.

EAS00812

1. Coolant temperature sensor

- Remove the coolant temperature sensor from the cylinder head.
- Connect the pocket tester (Ω × 10k) to the coolant temperature sensor ①as shown.
- Immerse the coolant temperature sensor in a container filled with coolant ②.

NOTE:

Make sure the coolant temperature sensor terminals do not get wet.

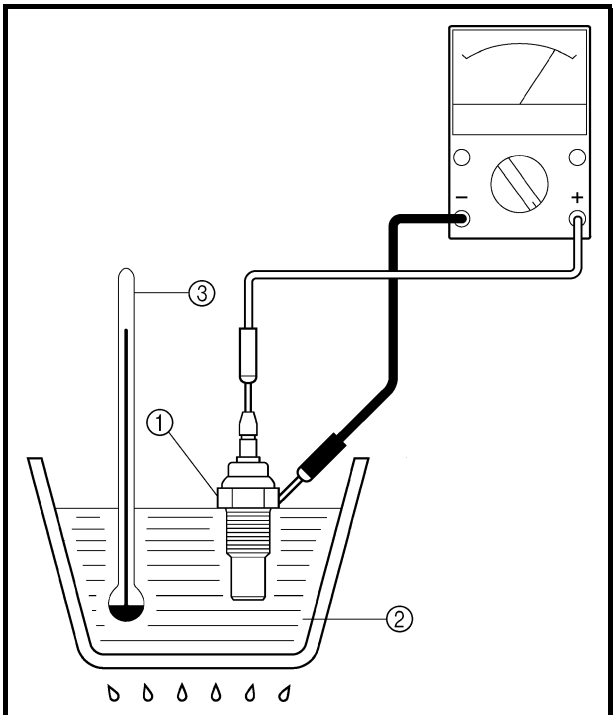
- Place a thermometer ③ in the coolant.
- Slowly heat the coolant, and then let it cool to the specified temperature indicated in the table.
- Check the coolant temperature sensor for continuity at the temperatures indicated below.

Coolant temperature sensor resistance
80 °C (176 °F): 69.0 Ω
100 °C (212 °F): 37.2 Ω

⚠ WARNING

- **Handle the coolant temperature sensor with special care.**
- **Never subject the coolant temperature sensor to strong shocks. If the coolant temperature sensor is dropped, replace it.**

Coolant temperature sensor
8 Nm (0.8 m · kg, 5.8 ft · lb)



- Does the coolant temperature sensor operate properly?

YES

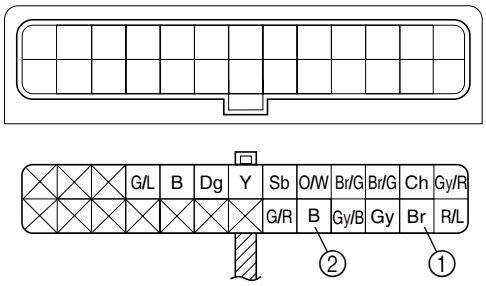
NO

Replace the coolant temperature sensor.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.

Positive tester probe → brown ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① and black ② at the meter assembly coupler.
- Is the voltage within specification?

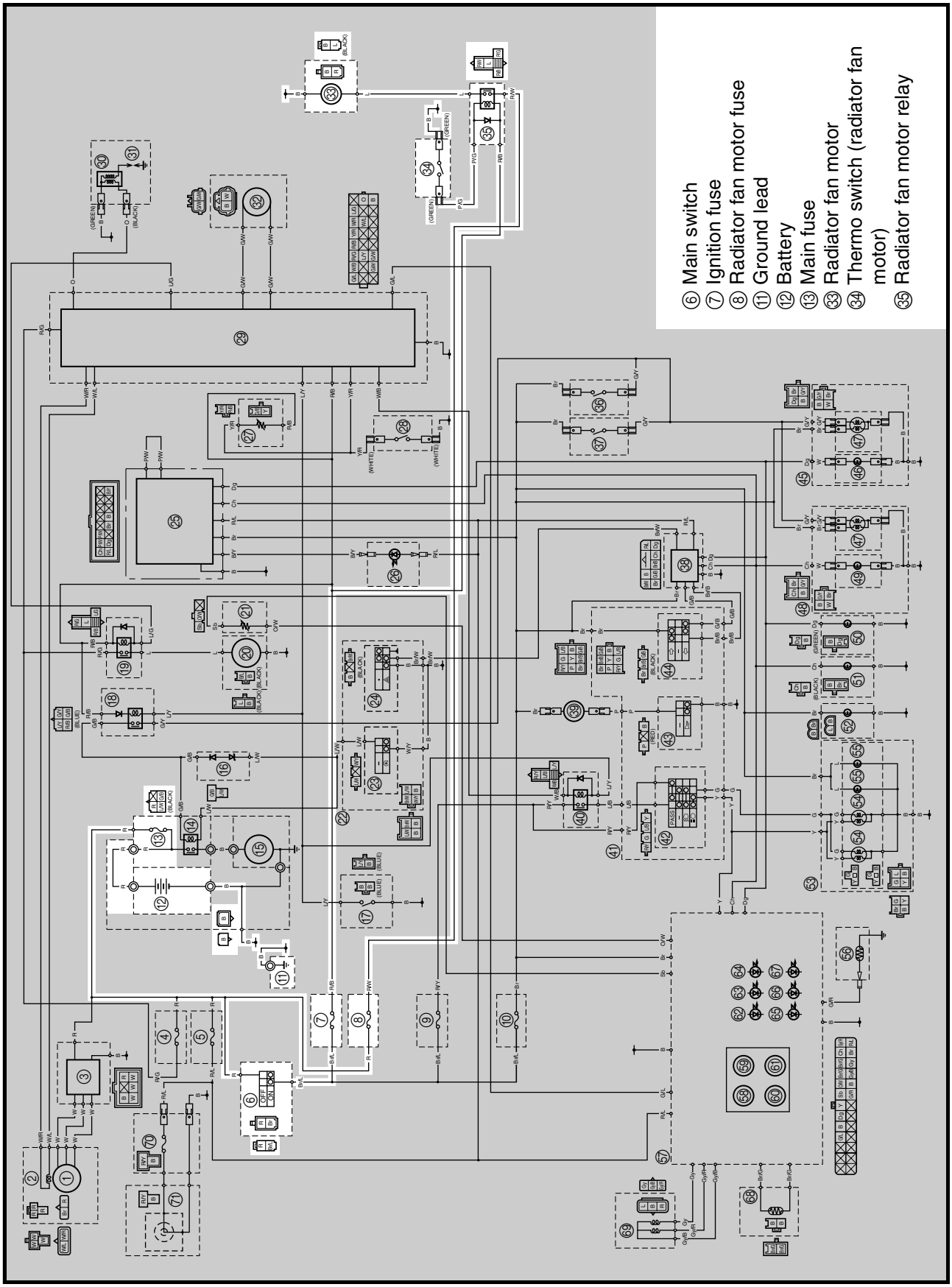
YES

Replace the meter assembly.

NO

The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

EAS00807
COOLING SYSTEM
CIRCUIT DIAGRAM



EAS00808
TROUBLESHOOTING

The radiator fan motor fails to turn.

Check:
1. main, ignition, and radiator fan motor fuses
2. battery
3. main switch
4. radiator fan motor
5. radiator fan motor relay
6. thermo switch (radiator fan motor)
7. wiring connections
   (the entire cooling system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. under cover

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main, ignition, and radiator fan motor fuses

- Check the main, ignition, and radiator fan motor fuses for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Are the main, ignition, and radiator fan motor fuses OK?

YES

NO → Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

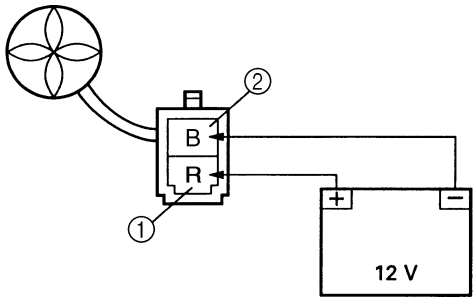
NO → Replace the main switch/immobilizer antenna.

EAS00809

4. Radiator fan motor

- Disconnect the radiator fan motor coupler from the wire harness.
- Connect the battery (DC 12 V) as shown.

Positive battery lead → red ①
Negative battery lead → black ②



- Does the radiator fan motor turn?

YES

NO

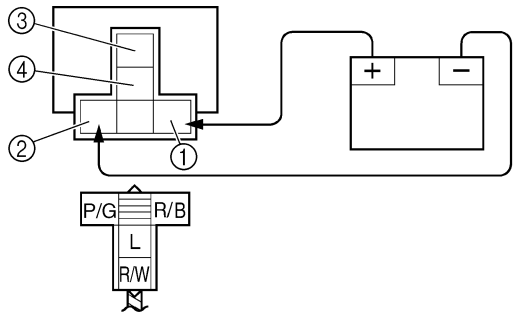
The radiator fan motor is faulty and must be replaced.

5. Radiator fan motor relay

- Remove the radiator fan motor relay.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the radiator fan motor terminal as shown.
- Check the radiator fan motor relay of continuity.

Positive battery terminal → red/black ①
Negative battery terminal → pink/green ②

Positive tester probe → red/white ③
Negative tester probe → blue ④



- Does the radiator fan motor relay have continuity between red/white and blue?

YES

NO

Replace the radiator fan motor relay.

EAS00811

6. Thermo switch (radiator fan motor)

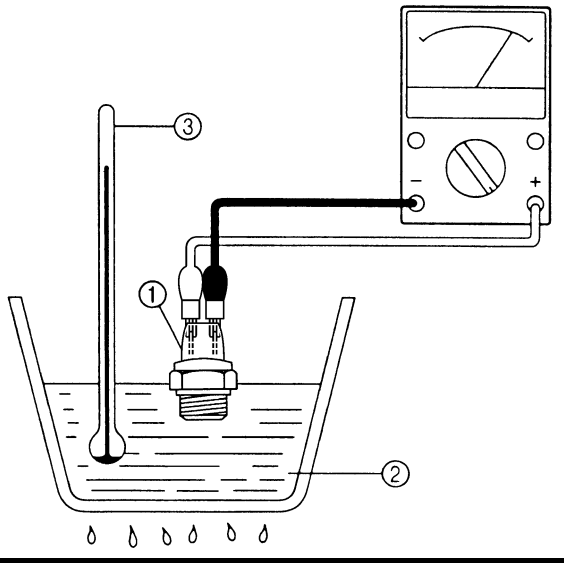
- Remove the thermo switch (radiator fan motor) from the radiator.
- Connect the pocket tester (Ω × 1) to the thermo switch ① as shown.
- Immerse the thermo switch in a container filled with coolant ②.

NOTE:
Make sure that the thermo switch terminals do not get wet.

- Place a thermometer ③ in the coolant.
- Slowly heat the coolant, and then let it cool down to the specified temperature.
- Check the thermo switch for continuity at the temperatures indicated in the table.

Test step	Coolant temperature / Thermo switch	Continuity
1	**Less than 105 ± 3 °C (221 ± 5.4 °F)**	**NO**
2	**More than 105 ± 3 °C (221 ± 5.4 °F)**	**YES**
3	**More than 98 ± 3 °C (208.4 ± 5.4 °F)**	**YES**
4	**Less than 98 ± 3 °C (208.4 ± 5.4 °F)**	**NO**

Steps 1 and 2: Heating phase
Steps 3 and 4: Cooling phase



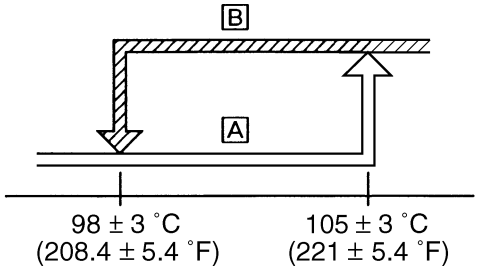
⚠ WARNING

- **Handle the thermo switch with special care.**
- **Never subject the thermo switch to strong shocks. If the thermo switch is dropped, replace it.**



thermo switch (radiator fan motor)
30 Nm (3.0 m · kg, 22 ft · lb)

A The thermo switch circuit is open and the radiator fan is off.
B The thermo switch circuit is closed and the radiator fan is on.



- Does the thermo switch operate properly as described above?

YES → NO

Replace the thermo switch (radiator fan motor).

EAS00813

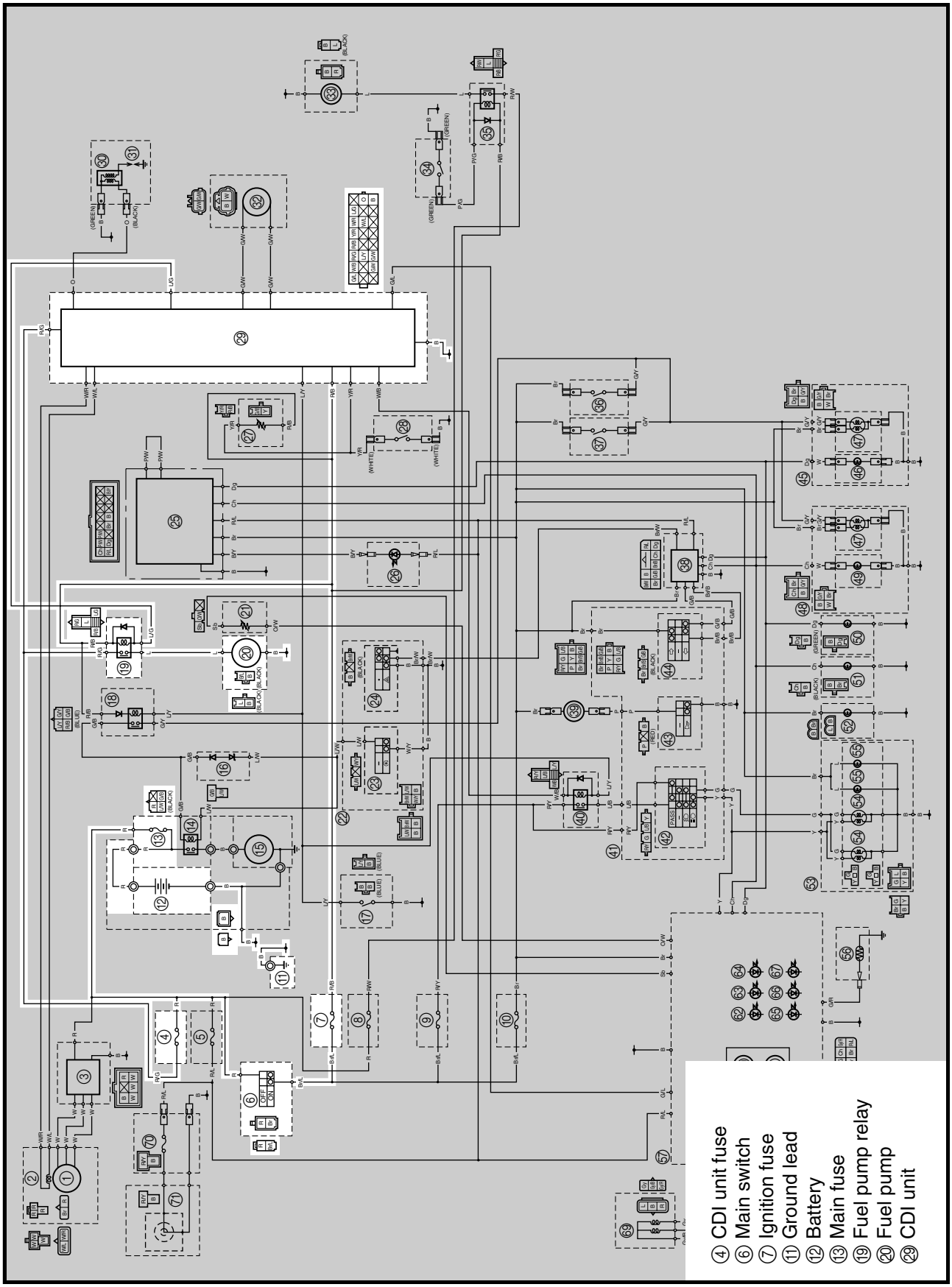
7. Wiring

- Check the entire cooling system wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the cooling system wiring properly connected and without defects?

YES → This circuit is OK.

NO → Properly connect or repair the cooling system wiring.

EAS00814
FUEL PUMP SYSTEM
CIRCUIT DIAGRAM

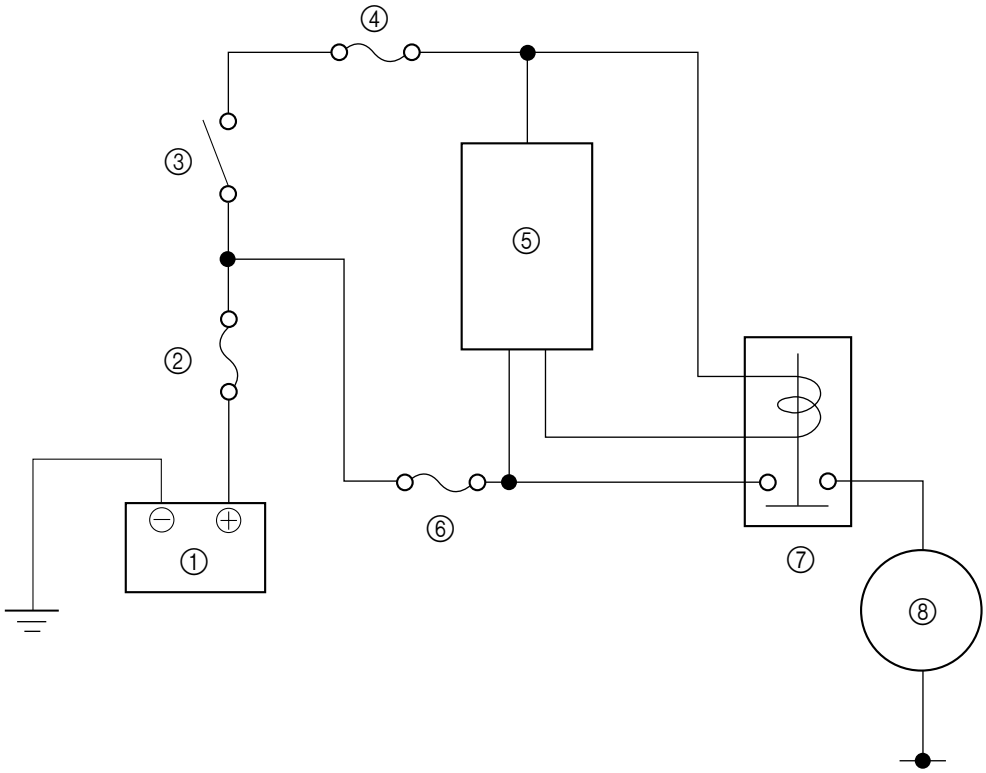


EB808010

FUEL PUMP CIRCUIT OPERATION

The fuel pump circuit consists of the fuel pump relay, fuel pump, and CDI unit.
The CDI unit includes the control unit for the fuel pump.

① Battery
② Main fuse
③ Main switch
④ Ignition fuse
⑤ CDI unit
⑥ CDI unit fuse
⑦ Fuel pump relay
⑧ Fuel pump



EAS00816
TROUBLESHOOTING

The fuel pump fails to operate.

Check:
1. main, ignition, and CDI unit fuses
2. battery
3. main switch
4. fuel pump relay
5. fuel pump operation
6. wiring connections
   (the entire fuel system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. footrest board

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main, ignition, and CDI unit fuses

- Check the main, ignition, and CDI unit fuses for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Are the main, ignition, and CDI unit fuses OK?

YES

NO

Replace the fuse(s).

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES

NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO

Replace the main switch/immobilizer antenna.

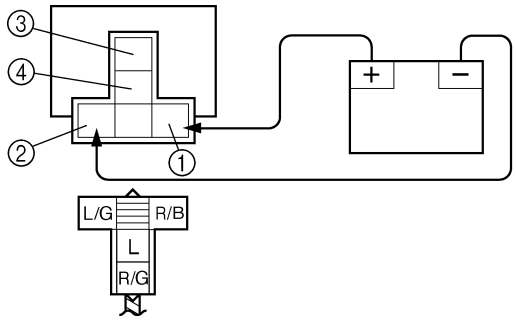
EAS00759

4. Fuel pump relay

- Remove the fuel pump relay.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the fuel pump relay terminals as shown.
- Check the fuel pump relay for continuity.

Positive battery terminal → red/black ①
Negative battery terminal → blue/green ②

Positive tester probe → red/green ③
Negative tester probe → blue ④



- Does the fuel pump relay have continuity between red/green and blue?

YES → NO

Replace the fuel pump relay.

EAS00817

5. Fuel pump operation

- Check the fuel pump operation. Refer to "CHECKING THE FUEL PUMP" in chapter 7.
- Is the fuel pump OK?

YES → NO

Replace the fuel pump.

EAS00818

6. Wiring

- Check the entire fuel pump system wiring. Refer to "CIRCUIT DIAGRAM".
- Is the fuel pump system wiring properly connected and without defects?

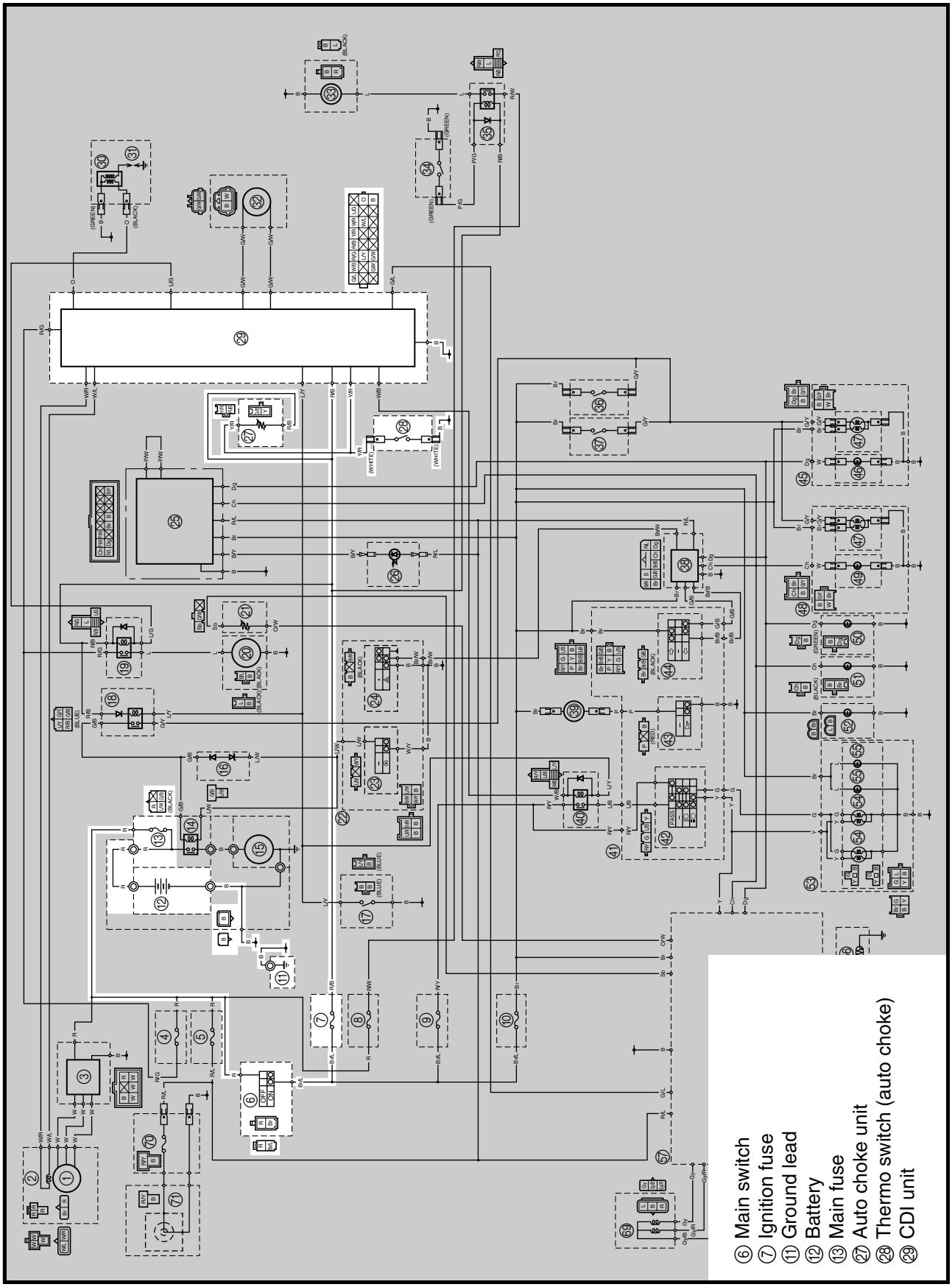
YES → Replace the CDI unit.

NO → Properly connect or repair the fuel pump system wiring.

EAS00820

AUTO CHOKE SYSTEM

CIRCUIT DIAGRAM



EAS00821
TROUBLESHOOTING

The auto choke system fails to operate.

Check:
1. main and ignition fuses
2. battery
3. main switch
4. thermo switch (auto choke)
5. auto choke unit
6. CDI unit
7. wiring connections
   (of the entire carburetor heating system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. storage box
2. front cowling
3. storage compartment
4. under cover

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main and ignition fuses
- Check the main and ignition fuses for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Are the main and ignition fuses OK?

YES

NO → Replace the fuse(s).

EAS00739

2. Battery
- Check the condition of the battery.
  Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 ° F)

- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch
- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO → Replace the main switch/immobilizer antenna.

4. Thermo switch (auto choke)

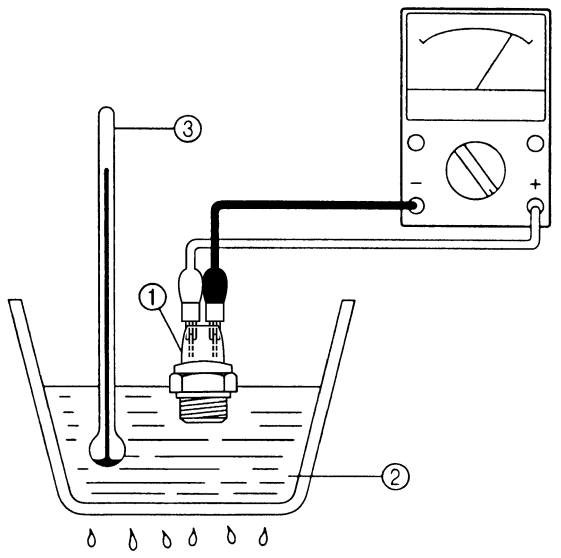
- Remove the thermo switch (auto choke) from the radiator.
- Connect the pocket tester (Ω × 1) to the thermo switch ①.
- Immerse the thermo switch in a container filled with coolant ②.

NOTE:
Make sure that the thermo switch terminals do not get wet.

- Place a thermometer ③ in the coolant.
- Slowly heat the coolant, then let it cool down to the specified temperature.
- Check the thermo switch for continuity at the temperatures indicated in the table.

Test step	Coolant temperature Thermo switch	Continuity
1	**Less than 47 ± 3 °C (116.6 ± 5.4 °F)**	**NO**
2	**More than 47 ± 3 °C (116.6 ± 5.4 °F)**	**YES**
3	**More than 42 ± 3 °C (107.6 ± 5.4 °F)**	**YES**
4	**Less than 42 ± 3 °C (107.6 ± 5.4 °F)**	**NO**

Steps 1 and 2: Heating phase
Steps 3 and 4: Cooling phase

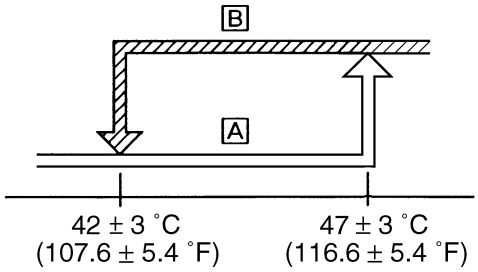


⚠ WARNING

- **Handle the thermo switch with special care.**
- **Never subject the thermo switch to strong shocks. If the thermo switch is dropped, replace it.**

Thermo switch (auto choke)
30 Nm (3.0 m · kg, 22 ft · lb)

A The thermo switch circuit is open and the auto choke is off.
B The thermo switch circuit is closed and the auto choke is on.



- Does the thermo switch operate properly as described above?

YES → NO

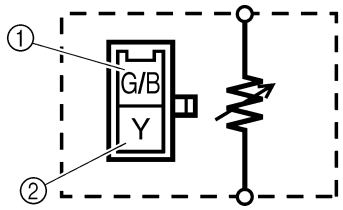
Replace the thermo switch (auto choke).

EAS00825

5. Auto choke unit

- Remove the auto choke unit coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 10$) to the auto choke unit coupler as shown.

Tester positive probe → green/black ①
Tester negative probe → yellow ②



- Measure the auto choke unit resistance.

Auto choke resistance
30 Ω at 20 °C (68 °F)

- Is the auto choke OK?

YES

NO

Replace the auto choke unit.

EAS00826

6. Wiring

- Check the entire auto choke system wiring.
  Refer to “CIRCUIT DIAGRAM”.
- Is the auto choke system wiring properly connected and without defects?

YES

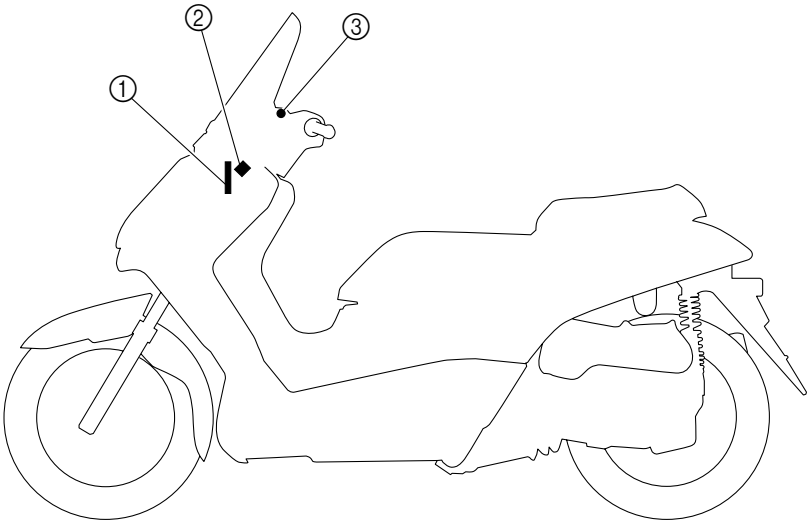
NO

Replace the CDI unit.

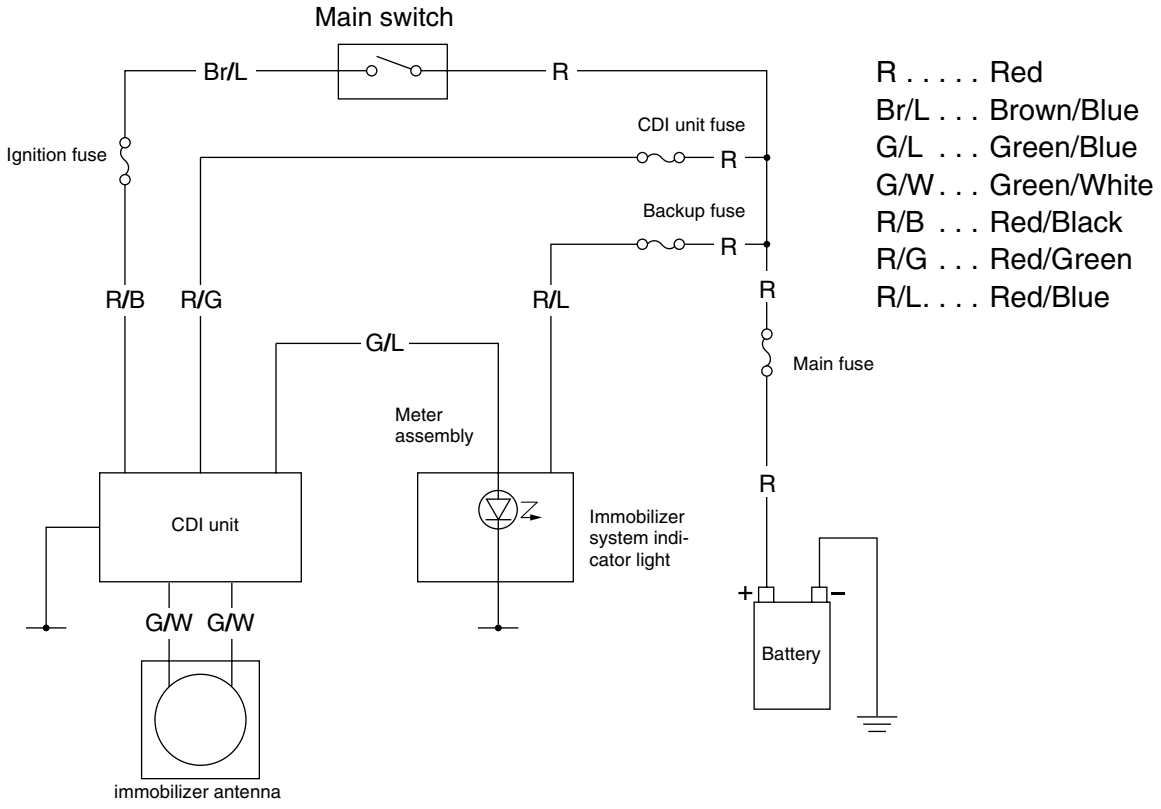
Properly connect or repair the auto choke system wiring.

IMMOBILIZER SYSTEM

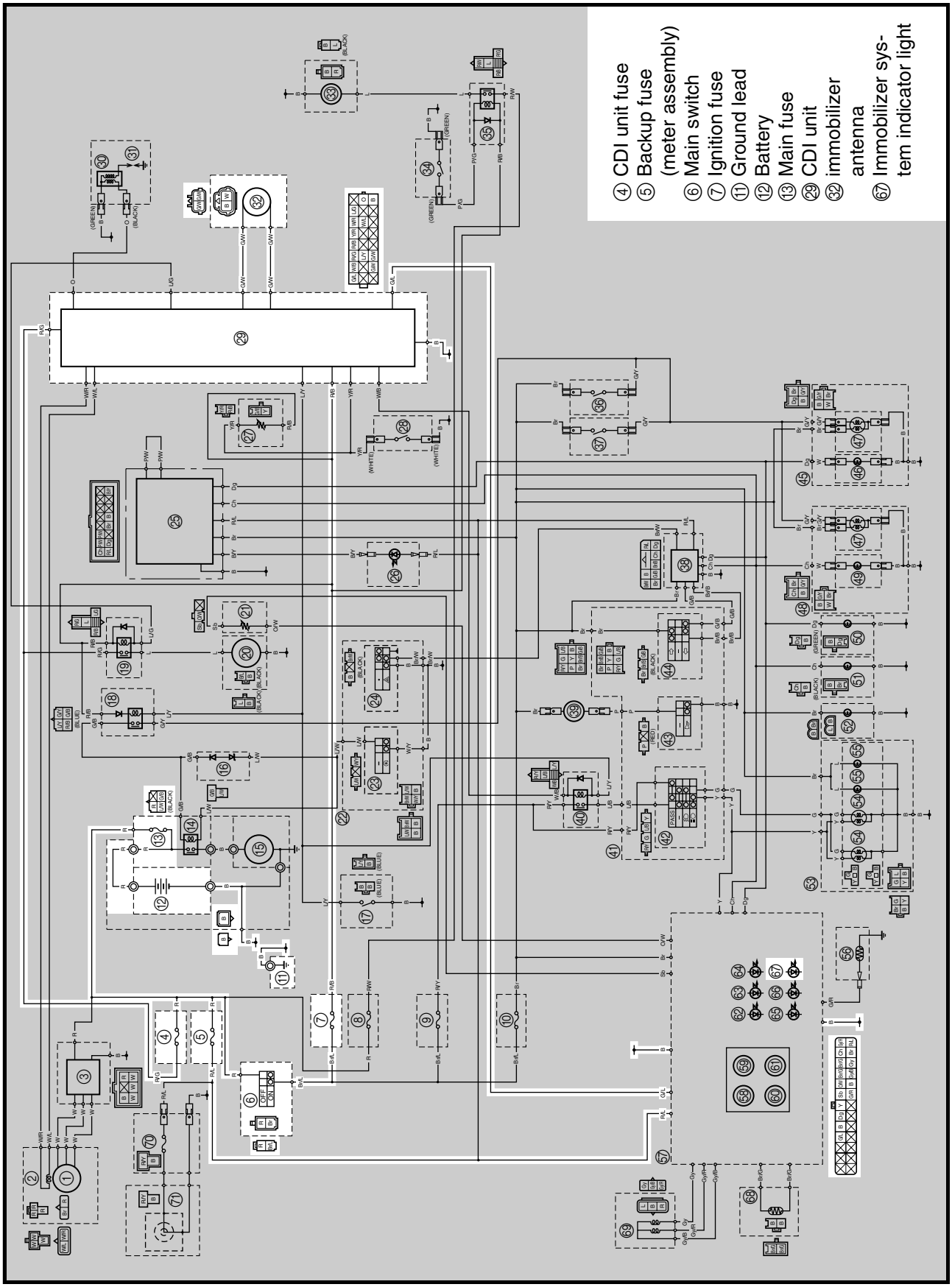
SYSTEM DIAGRAM



① CDI unit
② Main switch and immobilizer antenna
③ Immobilizer system indicator light



CIRCUIT DIAGRAM



GENERAL INFORMATION

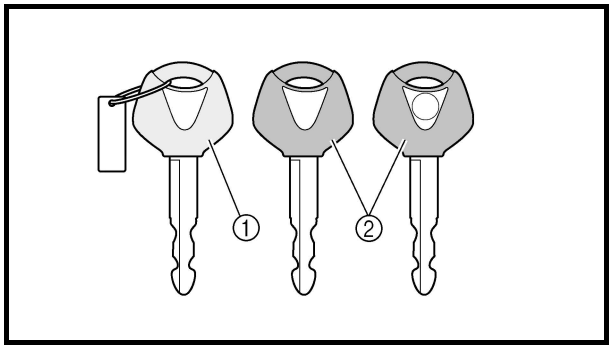
This vehicle is equipped with an immobilizer system to help prevent theft by registering codes in standard keys. This system consists of the following:

- a code re-registering key (with a red bow)
- two standard keys (with black bows) that can be re-registered with new codes
- transponders (one installed in each key bow)
- an immobilizer antenna
- a CDI unit
- an immobilizer system indicator light

The key with the red bow is used to register codes in each standard key. Do not use the key with the red bow for driving. It should only be used for registering new codes in the standard keys. The immobilizer system cannot be operated with a new standard key until a code is registered in the key. If you lose the code re-registering key, the main switch, and CDI unit must be replaced. Therefore, always use a standard key for driving.

NOTE:

Each standard key is registered during production, therefore, registering the keys at purchase is not necessary.



① Code re-registering key (red bow)
② Standard keys (black bow)

CAUTION:

- **DO NOT LOSE THE CODE RE-REGISTERING KEY! If the code re-registering key is lost, registering new codes in the standard keys is impossible. The standard keys can still be used to start the vehicle, however, if code re-registering is required (i.e., if a new standard key is made or all keys are lost) the entire immobilizer system must be replaced. Therefore, it is highly recommended to use either standard key and keep the code re-registering key in a safe place.**
- **Do not submerse the keys in water.**
- **Do not expose the keys to excessively high temperatures.**
- **Do not place the keys close to magnets (this includes, but not limited to, products such as speakers, etc.).**
- **Do not place heavy items on the keys.**
- **Do not grind the keys items or alter their shape.**
- **Do not disassemble the keys bows.**
- **Do not put two keys of any immobilizer system on the same key ring.**
- **Keep the standard keys as well as other immobilizer system keys away from the code re-registering key.**
- **Keep other immobilizer system keys away from the main switch as they may cause signal interference.**

KEY CODE REGISTRATION

Code registration of the code re-registering key or standard keys may be required when CDI is replaced or a standard key is lost.

NOTE:

Each standard key is registered during production, therefore, registering the keys at purchase is not necessary.

Code re-registering key registration:

When the CDI unit is replaced, the code re-registering key must be re-registered.

To register a code re-registering key:

1. Turn the main switch to "ON" with the code re-registering key.

NOTE:

Check that the immobilizer system indicator light comes on for 2 seconds, then goes off. When the indicator light goes off, the code re-registering key has been registered.

2. Check that the engine can be started, (after 3 seconds from switch to "ON").
3. Register the standard keys. Refer to "Standard key registration:".

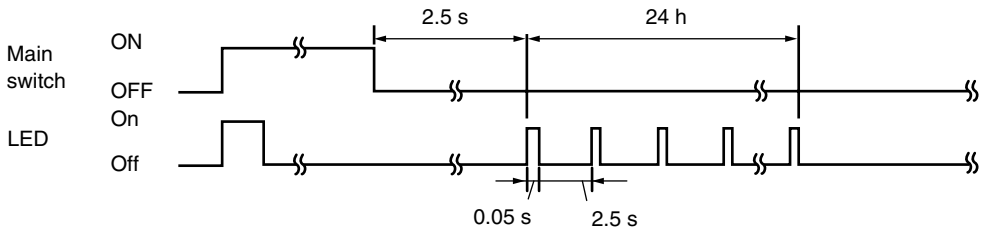
Standard key registration:

A standard key should be registered or the other standard keys should be re-registered when a registered standard key has been lost. The standard keys must be re-registered when the CDI unit has been replaced and the code re-registering key has been re-registered.

NOTE:

Do not start the engine with a standard key that has not been registered.
If the main switch is turned to "ON" with a standard key that has not been registered, the immobilizer system indicator light flashes to indicate malfunction code 3. (Refer to "SELF-DIAGNOSIS MALFUNCTION CODES".)

1. Check that the immobilizer system indicator light flashes to indicate the standby mode. To activate the standby mode, turn the main switch to "OFF". The standby mode will be activated after 2.5 seconds. The indicator light stops flashing after 24 hours and the standby mode is deactivated.

Standby mode	

2. Using the code re-registering key, turn the main switch to “ON”, then to “OFF”, and then remove the key within 3 seconds.

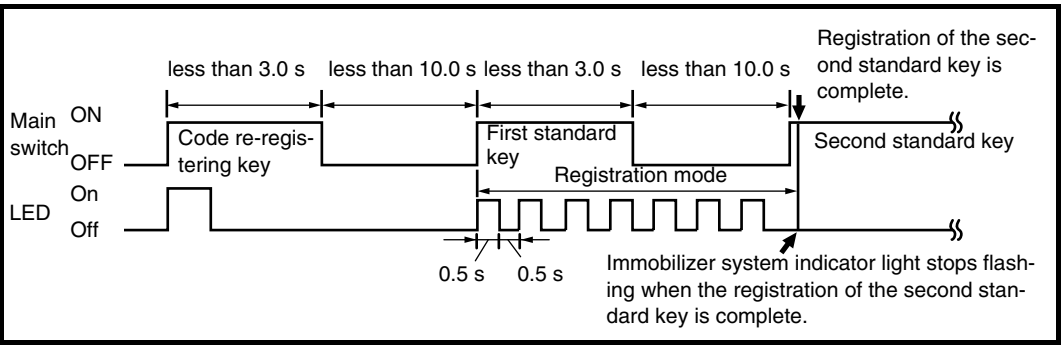
NOTE:
All existing standard key codes will be erased from the memory when the key registration mode is activated. When the key registration mode is activated, the immobilizer system indicator light is ON for 2 seconds, then will be OFF.

3. Insert the standard key to be registered into the main switch, and then turn the main switch to “ON” within 3 seconds.
4. After the above procedure, turn the main switch to “OFF”, remove the key and then insert the second standard key and turn the main switch to “ON” to be registered into the main switch within 10 seconds.
5. Turn the main switch from “ON”, to “OFF”, and then remove the key within 3 seconds.
6. Within 5 seconds and using the code re-registering key turn the main switch to “ON”, to “OFF”, and then remove the key within 3 seconds.

NOTE:
When the indicator light goes off, registration is complete.

NOTE:
Don’t make this registration procedure by standard key for virgin CDI unit. If main switch is turned “ON” with a standard key and CDI unit is virgin, then, for the CDI unit, this standard key will be like re-registering key.

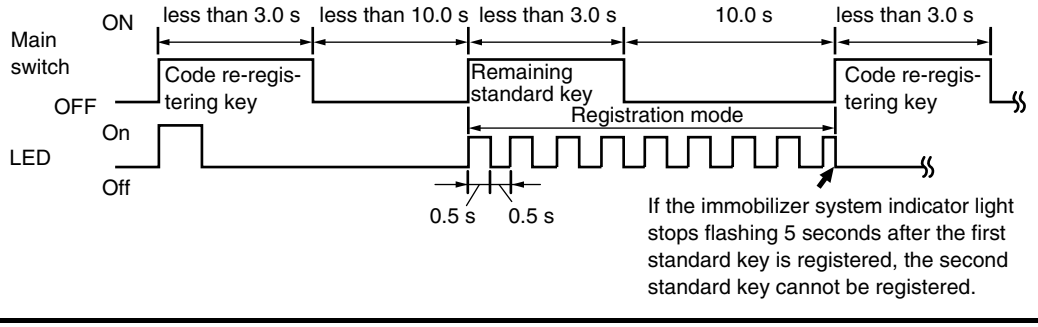
7. Check that the engine can be started with the two registered standard keys.

Standard key registration	

Voiding a standard key code:

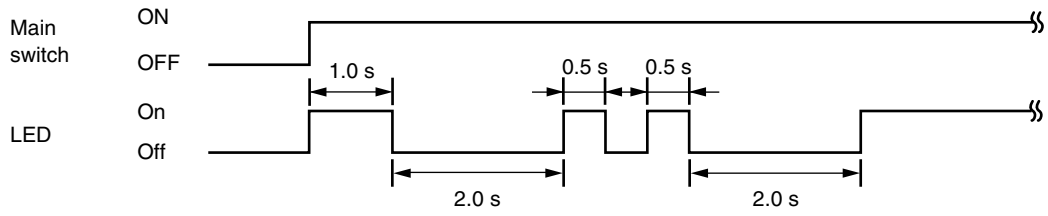
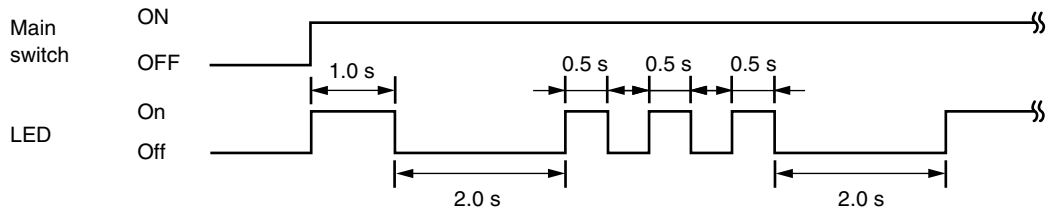
If a registered standard key has been lost and you want to disable its use, register a new standard key or re-register the other standard key. For registration of a standard key, refer to “Standard key registration:”.

Standard key registration erases the stored standard key codes from memory, therefore, the lost standard key is disabled.

Standard key code voiding method	

SELF-DIAGNOSIS MALFUNCTION CODES

When a system malfunction occurs, the malfunction code number is signaled by the immobilizer system indicator light flash patterns.

<table>
<tr><th>Malfunction code</th><th>Symptom</th><th>Immobilizer system condition</th><th>Malfunctioning part</th><th>Cause</th><th>Action</th></tr>
<tr><td rowspan="5">2</td><td rowspan="4">Engine cannot start.</td><td rowspan="4">CDI unit is not receiving any valid transponder code.</td><td>Key</td><td>Key malfunction</td><td>Replace the standard key.</td></tr>
<tr><td>CDI unit</td><td>CDI unit malfunction</td><td>Replace the CDI unit.</td></tr>
<tr><td>Others</td><td>Radio wave interference caused by objects around the keys and antenna.</td><td>Keep magnets, metal objects, and other immobilizer system keys away from the keys and antenna.</td></tr>
<tr><td></td><td>Noise interference</td><td>Check for the possible cause of the interference.</td></tr>
<tr><td>Main switch and immobilizer antenna</td><td>Disconnected leads</td><td>Check the leads.</td></tr>
<tr><td colspan="5">Flash pattern:
 
</td></tr>
<tr><td rowspan="4">3</td><td rowspan="2">Engine cannot start.</td><td rowspan="2">Codes transmitted between the key and CDI unit do not match.</td><td rowspan="2">Others</td><td>Signal received from other transponder (failed to recognize code after consecutive attempts).</td><td>Place other keys at least 50 mm away from the main switch.</td></tr>
<tr><td>Signal received from unregistered standard key.</td><td>Place other keys at least 50 mm away from the main switch.</td></tr>
<tr><td colspan="5">Flash pattern:
 
</td></tr>
</table>

EAS00794
TROUBLESHOOTING

When the main switch is turned "ON", the immobilizer system indicator light does not come on or flash.

Check:
1. main, ignition, CDI unit, and backup fuses
2. battery
3. main switch
4. wiring connections
   (of the entire immobilizer system)

NOTE:
- Before troubleshooting, remove the following part(s):
1. front cowling
2. storage compartment
- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Main, ignition, CDI unit, and backup fuses
- Check the main, ignition, CDI unit, and backup fuses for continuity.
  Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main, ignition, CDI unit, and backup fuses OK?

YES

NO → Replace the fuse(s).

EAS00739

2. Battery
- Check the condition of the battery.
  Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch
- Check the main switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES

NO → Replace the main switch/immobilizer antenna.

EAS00787

4. Wiring
- Check the entire immobilizer system wiring.
  Refer to "CIRCUIT DIAGRAM".
- Is the immobilizer system wiring properly connected and without defects?

YES → Check the condition of each of the immobilizer system circuits.
Refer to "CHECKING THE IMMOBILIZER SYSTEM".

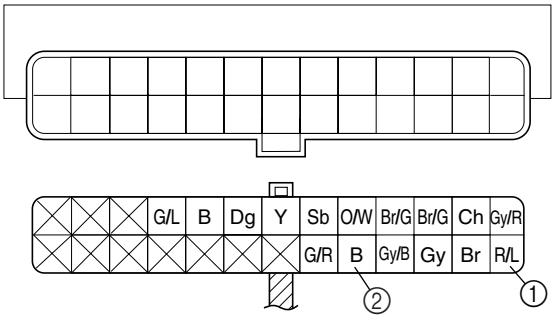
NO → Properly connect or repair the immobilizer system wiring.

EAS00788
CHECKING THE IMMOBILIZER SYSTEM

1. The immobilizer system indicator light does not come on.

1. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler as shown.



Positive tester probe → red/blue ①
Negative tester probe → black ②

- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) at the meter assembly coupler (wire harness side).
- Is the voltage within specification?

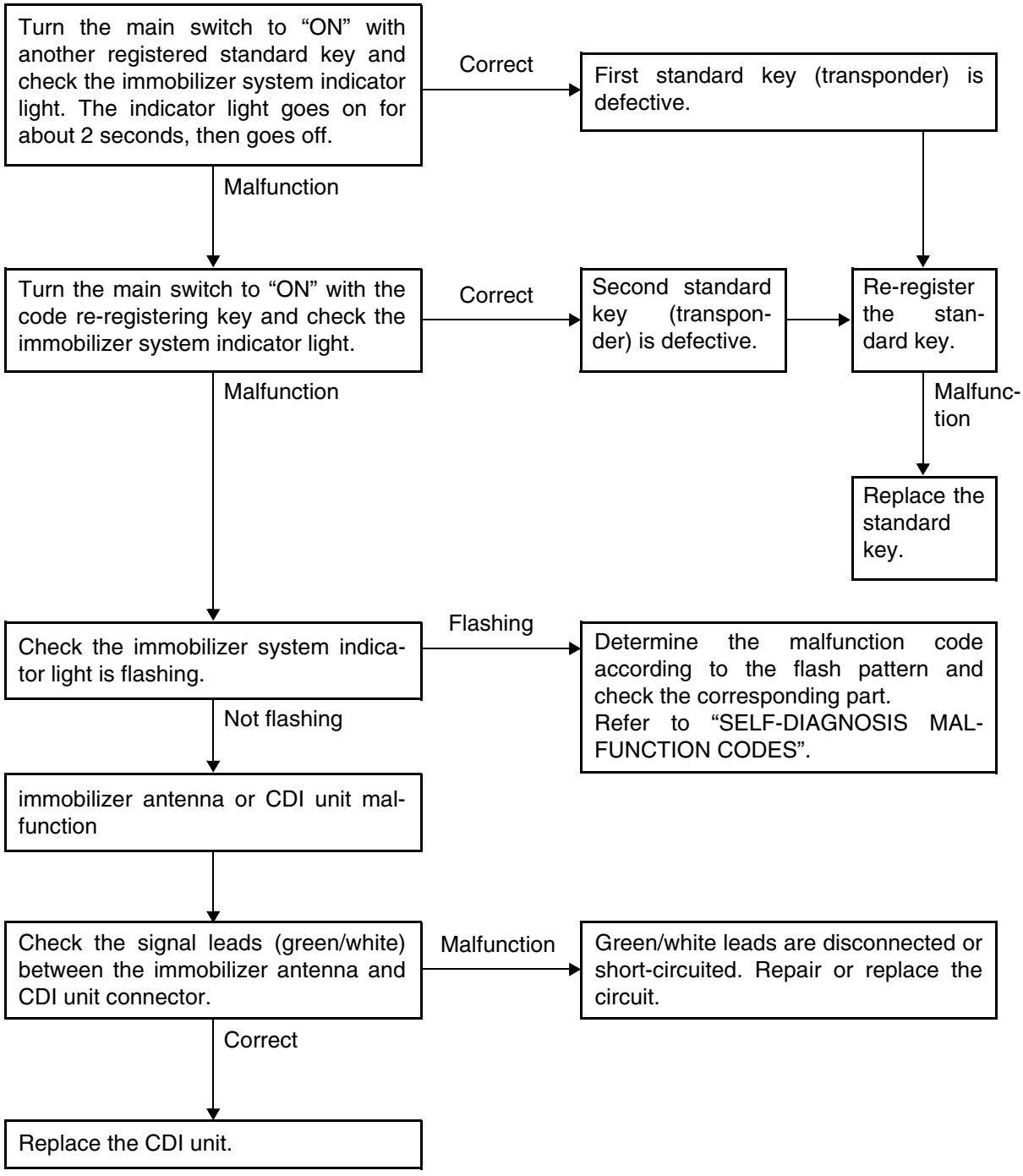
YES

Replace the meter assembly.

NO

The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

2. When the main switch is turned to “ON”, the immobilizer system indicator light flashes.
   • Check if a metal object or other immobilizer system keys are placed near the immobilizer antenna. If so, remove the objects or keys, and then check the condition again.



PART REPLACEMENT KEY REGISTRATION REQUIREMENTS

	Parts to be replaced					Required key registration
	Main switch	immobilizer antenna	Standard key	CDI unit	Accessory lock*2 and key	
Standard key is lost			○			New standard key
All keys have been lost (including code re-registering key)	○	○ *1	○	○	○	Code re-registering key and standard keys
CDI unit is defective				○		Code re-registering key and standard keys
immobilizer antenna is defective		○				Code re-registering key and standard keys
Main switch is defective	○	○ *1	○	○	○	Code re-registering key and standard keys
Accessory lock*2 is defective					○	Not required

*1 Replace as a set with the main switch.

*2 Accessory locks include the fuel tank cap lock and storage compartment lock.

NOTE:

If the CDI unit is replaced, both the code re-registering key and the standard keys need to be registered with the new unit(s).

CHAPTER 9
TROUBLESHOOTING

STARTING FAILURE/HARD STARTING 9-1
ENGINE 9-1
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EAS00845

TROUBLESHOOTING

NOTE:

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

STARTING FAILURE/HARD STARTING

ENGINE

Cylinder and cylinder head

- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder head gasket
- Damaged cylinder gasket
- Worn or damaged cylinder
- Incorrect valve clearance
- Improperly sealed valve
- Incorrect valve-to-valve-seat contact
- Incorrect valve timing
- Faulty valve spring
- Seized valve

Piston and piston ring(s)

- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

Air filter

- Improperly installed air filter
- Clogged air filter element

Crankcase and crankshaft

- Improperly assembled crankcase
- Seized crankshaft

FUEL SYSTEM

Fuel tank

- Empty fuel tank
- Clogged fuel tank cap breather hole
- Deteriorated or contaminated fuel
- Clogged or damaged fuel hose

Carburetor

- Deteriorated or contaminated fuel
- Clogged pilot jet
- Clogged pilot air passage
- Sucked-in air
- Damaged float
- Worn needle valve
- Improperly installed needle valve seat
- Incorrect fuel level
- Improperly adjusted pilot screw
- Improperly installed pilot jet
- Clogged starter jet
- Clogged emulsion tube

Auto choke unit

- Faulty CDI unit
- Faulty thermo switch (auto choke)

ELECTRICAL SYSTEMS

Battery
- Discharged battery
- Faulty battery

Fuse(s)
- Blown, damaged or incorrect fuse
- Improperly installed fuse

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil
- Cracked or broken ignition coil body
- Broken or shorted primary or secondary coils
- Faulty spark plug lead

Ignition system
- Faulty CDI unit
- Faulty pickup coil
- Broken generator rotor woodruff key

Switches and wiring
- Faulty main switch
- Faulty engine stop switch
- Broken or shorted wiring
- Faulty front, rear or both brake light switches
- Faulty start switch
- Faulty sidestand switch
- Improperly grounded circuit
- Loose connections

Starting system
- Faulty starter motor
- Faulty starter relay
- Faulty starting circuit cut-off relay
- Faulty starter clutch

EAS00847
INCORRECT ENGINE IDLING SPEED

ENGINE

Cylinder and cylinder head
- Incorrect valve clearance
- Damaged valve train components

Air filter
- Clogged air filter element

FUEL SYSTEM

Carburetor
- Loose or clogged pilot jet
- Damaged or loose carburetor joint
- Improperly adjusted engine idling speed (throttle stop screw)
- Improper throttle cable free play
- Flooded carburetor

Auto choke unit
- Faulty CDI unit

ELECTRICAL SYSTEMS

Battery
- Discharged battery
- Faulty battery

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil
- Faulty spark plug lead

Ignition system
- Faulty CDI unit
- Faulty pickup coil

EAS00849
POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE

Refer to “STARTING FAILURE/HARD STARTING”.

ENGINE

Air filter
- Clogged air filter element

Air intake system
- Bent, clogged or disconnected carburetor air vent hose
- Clogged or leaking air duct

FUEL SYSTEM

Carburetor
- Faulty diaphragm
- Incorrect fuel level
- Loose or clogged main jet

EAS00853
FAULTY CLUTCH

ENGINE OPERATES BUT VEHICLE WILL NOT MOVE

V-belt
- Bent, damaged or worn V-belt
- Slipping V-belt

Primary pulley cam and primary pulley slider
- Damaged or worn primary pulley cam
- Damaged or worn primary pulley slider

Clutch spring(s)
- Damaged clutch spring

Transmission gear(s)
- Damaged transmission gear

CLUTCH SLIPS

Clutch shoe spring(s)
- Damaged, loose or worn clutch shoe spring

Clutch shoe(s)
- Damaged or worn clutch shoe

Primary sliding sheave
- Seized primary sliding sheave

POOR STARTING PERFORMANCE

V-belt
- V-belt slips
- Oil or grease on the V-belt

Primary sliding sheave
- Faulty operation
- Worn pin groove
- Worn pin

Clutch shoe(s)
- Bent, damaged or worn clutch shoe

POOR SPEED PERFORMANCE

V-belt
- Oil or grease on the V-belt

Primary pulley weight(s)
- Faulty operation
- Worn primary pulley weight

Primary fixed sheave
- Worn primary fixed sheave

Primary sliding sheave
- Worn primary sliding sheave

Secondary fixed sheave
- Worn secondary fixed sheave

Secondary sliding sheave
- Worn secondary sliding sheave

EAS00855
OVERHEATING

ENGINE

Clogged coolant passages
- Cylinder head and piston
- Heavy carbon buildup

Engine oil
- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

COOLING SYSTEM

Coolant
- Low coolant level

Radiator
- Damaged or leaking radiator
- Faulty radiator cap
- Bent or damaged radiator fin

Water pump
- Damaged or faulty water pump
- Thermostat
- Thermostat stays closed
- Hose(s) and pipe(s)
- Damaged hose
- Improperly connected hose
- Damaged pipe
- Improperly connected pipe

FUEL SYSTEM

Carburetor
- Incorrect main jet setting
- Incorrect fuel level
- Damaged or loose carburetor joint

Air filter
- Clogged air filter element

CHASSIS

Brake(s)
- Dragging brake

ELECTRICAL SYSTEMS

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range

Ignition system
- Faulty CDI unit

EAS00856
OVERCOOLING

COOLING SYSTEM

Thermostat
- Thermostat stays open

EAS00857
POOR BRAKING PERFORMANCE
- Worn brake pad
- Worn brake disc
- Air in hydraulic brake system
- Leaking brake fluid
- Faulty brake caliper kit
- Faulty brake caliper seal
- Loose union bolt
- Damaged brake hose
- Oil or grease on the brake disc
- Oil or grease on the brake pad
- Incorrect brake fluid level

EAS00860
FAULTY FRONT FORK LEGS

LEAKING OIL
- Bent, damaged or rusty inner tube
- Cracked or damaged outer tube
- Improperly installed oil seal
- Damaged oil seal lip
- Incorrect oil level (high)
- Loose damper rod assembly bolt
- Damaged damper rod assembly bolt copper washer
- Loose drain bolt
- Damaged drain bolt gasket

MALFUNCTION
- Bent or damaged inner tube
- Bent or damaged outer tube
- Damaged fork spring
- Worn or damaged outer tube bushing
- Bent or damaged damper rod
- Incorrect oil viscosity
- Incorrect oil level

EAS00866
FAULTY LIGHTING OR SIGNALING SYSTEM

HEADLIGHT DOES NOT COME ON
- Wrong headlight bulb
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main or dimmer/pass switch)
- Burnt-out headlight bulb

HEADLIGHT BULB BURNT OUT
- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Faulty dimmer/pass switch
- Headlight bulb life expired

TAIL/BRAKE LIGHT DOES NOT COME ON
- Wrong tail/brake light bulb
- Too many electrical accessories
- Incorrect connection
- Burnt-out tail/brake light bulb

TAIL/BRAKE LIGHT BULB BURNT OUT
- Wrong tail/brake light bulb
- Faulty battery
- Incorrectly adjusted front and rear brake light switch
- Tail/brake light bulb life expired

TURN SIGNAL DOES NOT COME ON
- Faulty turn signal switch
- Faulty turn signal/hazard relay
- Burnt-out turn signal bulb
- Incorrect connection
- Damaged or faulty wire harness
- Improperly grounded circuit
- Faulty battery
- Blown, damaged or incorrect fuse

TURN SIGNAL FLASHES SLOWLY
- Faulty turn signal/hazard relay
- Faulty main switch
- Faulty turn signal switch
- Incorrect turn signal bulb

TURN SIGNAL REMAINS LIT
- Faulty turn signal/hazard relay
- Burnt-out turn signal bulb

TURN SIGNAL FLASHES QUICKLY
- Incorrect turn signal bulb
- Faulty turn signal/hazard relay
- Burnt-out turn signal bulb

HORN DOES NOT SOUND
- Improperly adjusted horn
- Damaged or faulty horn
- Faulty main switch
- Faulty horn switch
- Faulty battery
- Blown, damaged or incorrect fuse
- Faulty wire harness

YP250R 2005 WIRING DIAGRAM

① AC magneto
② Pickup coil
③ Rectifier/regulator
④ CDI unit fuse
⑤ Backup fuse (meter assembly)
⑥ Main switch
⑦ Ignition fuse
⑧ Radiator fan motor fuse
⑨ Headlight fuse
⑩ Signaling system fuse
⑪ Ground lead
⑫ Battery
⑬ Main fuse
⑭ Starter relay
⑮ Starter motor
⑯ Diode
⑰ Sidestand switch
⑱ Starting circuit cut-off relay
⑲ Fuel pump relay
⑳ Fuel pump
㉑ Fuel sender
㉒ Handlebar upper cover right switches
㉓ Start switch
㉔ Hazard switch
㉕ Anti-theft alarm (OPTION)
㉖ Anti-theft alarm LED (OPTION)
㉗ Auto choke unit
㉘ Thermo switch (auto choke)
㉙ CDI unit
㉚ Ignition coil
㉛ Spark plug
㉜ immobilizer antenna
㉝ Radiator fan motor
㉞ Thermo switch (radiator fan motor)
㉟ Radiator fan motor relay
㊱ Rear brake light switch
㊲ Front brake light switch
㊳ Turn signal/hazard relay
㊴ Horn
㊵ Headlight relay
㊶ Handlebar upper cover left switches
㊷ Dimmer/pass switch
㊸ Horn switch
㊹ Turn signal switch
㊺ Tail/brake light assembly (right)
㊻ Rear turn signal light (right)
㊼ Tail/brake light
㊽ Tail/brake light assembly (left)
㊾ Rear turn signal light (left)
㊿ Front turn signal light (right)
(51) Front turn signal light (left)
(52) License plate light
(53) Headlight assembly
(54) Headlight
(55) Auxiliary light
(56) Coolant temperature sensor
(57) Meter assembly
(58) Coolant temperature gauge
(59) Fuel level gauge
(60) Speedometer
(61) Multifunction meter
(62) Meter light
(63) Fuel level warning light
(64) High beam indicator light
(65) Left turn signal indicator light
(66) Right turn signal indicator light
(67) Immobilizer system indicator light
(68) Air temperature sensor
(69) Speed sensor
(70) Auxiliary DC jack fuse (OPTION)
(71) Auxiliary DC jack (OPTION)

COLOR CODE

B	Black
Br	Brown
Ch	Chocolate
Dg	Dark green
G	Green
Gy	Gray
L	Blue
O	Orange
P	Pink
R	Red
Sb	Sky blue
W	White
Y	Yellow
B/L	Black/Blue
B/Y	Black/Yellow
Br/B	Brown/Black
Br/G	Brown/Green
Br/L	Brown/Blue
Br/W	Brown/White
G/B	Green/Black
G/L	Green/Blue
G/R	Green/Red
G/W	Green/White
G/Y	Green/Yellow
Gy/B	Gray/Black
Gy/R	Gray/Red
L/B	Blue/Black
L/G	Blue/Green
L/W	Blue/White
L/Y	Blue/Yellow
O/W	Orange/White
P/G	Pink/Green
R/B	Red/Black
R/G	Red/Green
R/L	Red/Blue
R/W	Red/White
R/Y	Red/Yellow
W/B	White/Black
W/L	White/Blue
W/R	White/Red
W/Y	White/Yellow
Y/R	Yellow/Red

YAMAHA

YAMAHA MOTOR ESPAÑA, S.A.

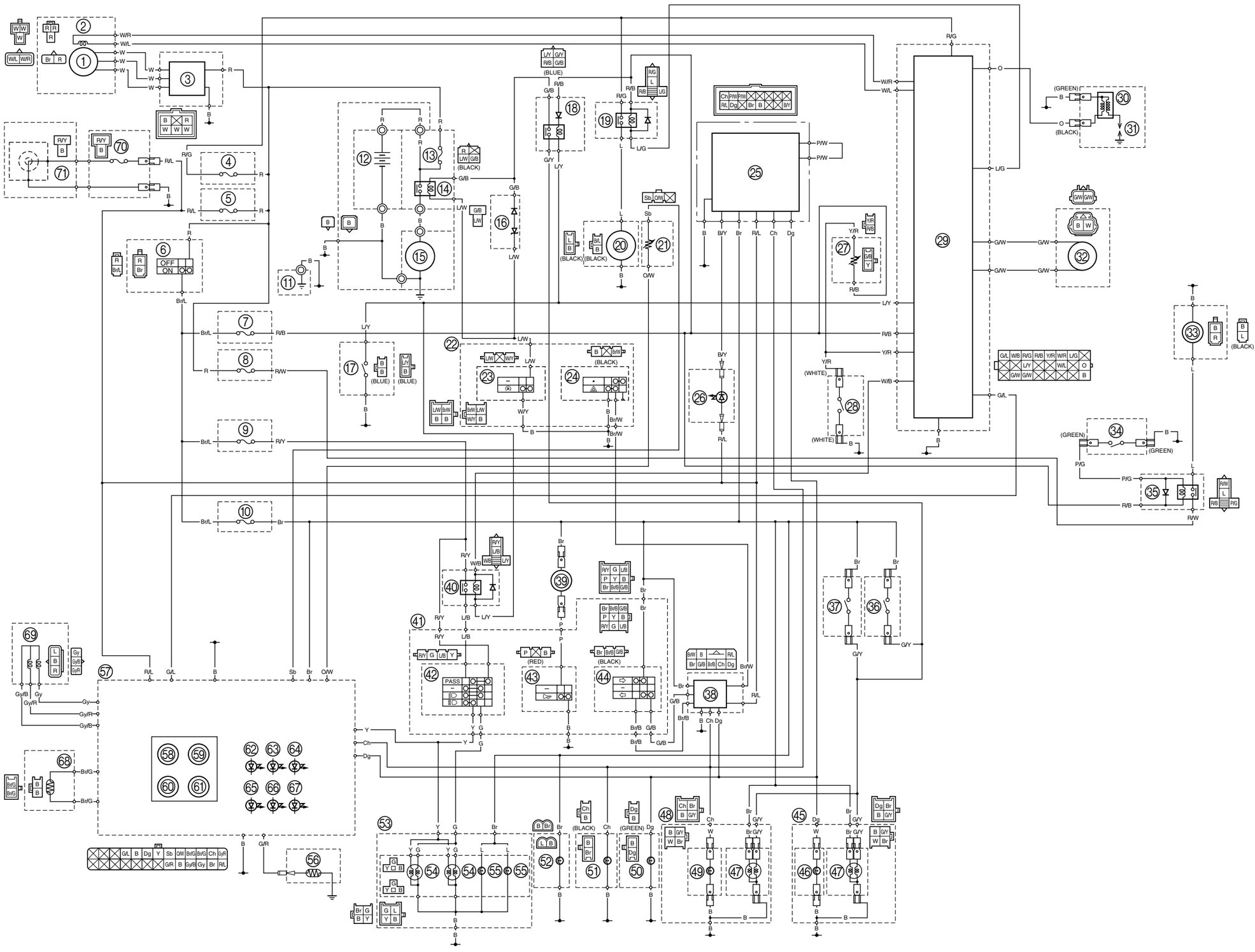
YP250R 2005
WIRING DIAGRAM

YP250R 2005
SCHÉMA DE CÂBLAGE

YP250R 2005
SCHALTPLAN

YP250R 2005
SCHEMA ELETTRICO

YP250R 2005
DIAGRAMA ELÉCTRICO



YP250R 2005
WIRING DIAGRAM

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